Journal

OF THE

American Dietetic Association

Edited for the Association Under the Direction of the Journal Board

By

MARY P. HUDDLESON

Volume 18 **January–December 1942**

American Dietetic Association, Chicago, 1942

Officers, 1942–43

AMERICAN DIETETIC ASSOCIATION

Headquarters of the Association, 185 N. Wabash Ave., Chicago

Honorary President

LULU G. GRAVES, 2605 Haste St., Berkeley, Cal.

EXECUTIVE BOARD

President, FRANCES MACKINNON, American Red Cross, 1709 Washington Ave., St. Louis
President-Elect, NELL CLAUSEN, Milwaukee Children's Hospital
Vice-President, and Chairman, House of Delegates, ELIZABETH PERRY, Cleveland City Hospital
Secretary, and Chairman, Membership Committee, BESSIE BROOKS WEST, Kansas State College, Manhattan
Treasurer, and Chairman, Finance Committee, MARIE L. CASTEEN, Phoenix, Arizona
Administration Section Chairman, MANIZA MOORE, Vanderbilt University Hospital, Nashville, Tennessee
Community Education Section Chairman, DOROTHY B. HACKER, Visiting Nurse Assn., 51 W. Warren, Detroit
Diet Therapy Section Chairman, DOROTHEA FLETCHER TURNER, University Clinics, University of Chicago
Professional Education Section Chairman, HELEN A. HUNSCHER, Western Reserve University, Cleveland

HOUSE OF DELEGATES

Chairman, ELIZABETH PERRY, Cleveland City Hospital
Secretary, EMMA L. FEENEY, Pratt Institute, Brooklyn

STAFF

Business Manager, DOROTHY I. LENFEST, 185 N. Wabash Ave., Chicago
Educational Director, GLADYS E. HALL, 185 N. Wabash Ave., Chicago
Journal Editor, MARY P. HUDDLESON, New Canaan, Connecticut

ADVISORY COMMITTEE

JOE CLEMONS, M.D., Roosevelt Hospital, New York.. 1943
HELEN JUDY BOND, Teachers College, New York..... 1944
To be appointed..... 1945

JOURNAL BOARD

ROSALIE S. GODFREY, Alice Littlefield Dormitory, The University of Texas, Austin..... 1943
ESTELLE E. HAWLEY, University of Rochester Medical School, Rochester, New York..... 1944
MARY W. NORTHROP, King County Hospital System, Seattle..... 1945
GRACE MACLEOD, Teachers College, Columbia University, New York..... 1946
BEULA BECKER MARBLE, 131 Laurel Rd., Chestnut Hill, Massachusetts..... 1947
To be appointed..... 1948

PLACEMENT BUREAU BOARD

SELMA STREIT, Scottish Rite Dormitory, Austin, Texas..... 1943
ESTELLE NESBITT, Indiana State Board of Health, Indianapolis..... 1944
ROSINA VANCE, New England Deaconess Hospital, Boston..... 1945
ANNA M. TRACY, Florida State College for Women, Tallahassee..... 1946
WINNING S. PENDERGAST, Board of Education, Detroit 1947
RUTH FORSBERG, Swedish Hospital, Seattle..... 1948

INVESTIGATION BOARD

LILLIAN B. STORMS, Gerber Products Company, Fremont, Michigan..... 1943
ROSALIE S. GODFREY..... 1944
HENDERIKA J. RYNBERGEN, New York Hospital, New York..... 1945

COMMITTEE CHAIRMEN

Constitution and By-Laws, to be appointed
Convention, to be appointed
Educational Exhibits, to be appointed
Finance, the Treasurer; MARGARET COWDEN and BEULAH HUNZICKER
Historian, LOUISE STEPHENSON, Grasslands Hospital, Valhalla, New York
Legislative, EVELYN ANDERSON, Doctor's Hospital, Washington, D. C.
Library, to be appointed
Nominating, LILLIAN B. STORMS
Organization and Procedure Book, NELL CLAUSEN
Press Relations, EDITH BARBER, 36 West Ninth St., New York
Program, to be appointed
Publications, LILLIAN B. STORMS
Reorganization, ANNA M. TRACY
War Activities, NELDA ROSS, Presbyterian Hospital, New York

State Dietetic Associations Affiliated With The American Dietetic Association

ALABAMA: *President*, Ethel Summerour, T. C. I. Hospital, Fairfield; *Delegate*, Lucile Rice, South Highlands Infirmary, Birmingham
ARIZONA: *President*, Dorothy Bradfield, 641 W. Indian School Rd., Phoenix; *Delegate*, Mrs. Lola Dudgeon, University of Arizona, Tucson
CALIFORNIA: *President*. Octavie de Beaulieu. Olive View Sanatorium, Olive View
COLORADO: *President and Delegate*, Louise Mohr, University Hospital, Denver
CONNECTICUT: *President*, Mrs. Alice Manek Stewart, Norwalk Hospital, Norwalk; *Delegate*, Gladys Hills, Greenwich T. B. Association, Greenwich
DELAWARE: *President*, Fern Brown, Wilmington General Hospital, Wilmington; *Delegate*, Kate Burns, Milford Memorial Hospital, Milford
DISTRICT OF COLUMBIA: *President*, Mrs. Margaret Ellis Dagan, 521 Oakwood St., Washington, D. C. *Delegate*, Mildred Parker, St. Elizabeth Hospital, Washington
FLORIDA: *President*, Edith Manford, Florida State College for Women, Tallahassee; *Delegate*, Jennie Tilt, Florida State College for Women, Tallahassee
GEORGIA: *President and Delegate*, Eleanor Kellow, Davison-Paxon Company, Atlanta
ILLINOIS: *President*, Margaret Cowden, Michael Reese Hospital, Chicago; *Delegate*, Beulah Hunzicker, Presbyterian Hospital, Chicago
INDIANA: *President*, Mrs. Marie F. Hawk, Ind. Univ. Medical Center, Indianapolis; *Delegate*, Cecilia Schuck, Purdue University, Lafayette
IOWA: *President*, Edna M. Shalla, University Hospitals, Iowa City; *Delegate*, Fern Gleiser, Iowa State College, Ames
KANSAS: *President*, Mrs. Bessie B. West, Kansas State College, Manhattan; *Delegate*, Martha S. Pittman, Kansas State College, Manhattan
KENTUCKY: *President*, Florence Imlay, Experiment Station, University of Kentucky, Lexington; *Delegate*, Gertrude Walker, Berea College Hospital, Berea.
LOUISIANA: *President*, Mary Lois Gill, Touro Infirmary, New Orleans; *Delegate*, Mildred Rewerts, Charity Hospital, New Orleans
MARYLAND: *President*, Alice E. Jané, Home for Incurables, Baltimore; *Delegate*, Helen Baughman, Johns Hopkins Hosp., Baltimore
MASSACHUSETTS: *President*, Opal Bowers, Harvard School of Business Administration, Cambridge; *Delegate*, Ruth L. White, Forsyth Dental Infirmary, Boston
MICHIGAN: *President*, Mrs. Jean Hawks Hewitson, Michigan State College, East Lansing; *Delegate*, Dr. Lillian B. Storms, Gerber Products Company, Fremont
MINNESOTA: *President*, Ethyl Clemens, Swedish Hospital, Minneapolis; *Delegate*, Erma Boehme, Ancker Hospital, St. Paul
MISSOURI: *President*, Mrs. Theodora Stebbins, Alexian Brothers Hospital St. Louis; *Delegate*, Ethel Ollis, Research Hospital, Kansas City
MONTANA: *President*, Mrs. Nellie De Kalb Wolfe, Montana State Hospital, Warm Springs
NEBRASKA: *President*, Mrs. Leah Bedwell Barr, University of Nebraska Hospital, Omaha; *Delegate*, Margaret Bruechert, Immanuel Deaconess Institute, Omaha
NEW HAMPSHIRE: *President and Delegate*, Alice W. Van Dyke, New Hampshire State Hospital, Concord
NEW JERSEY: *President*, Lillian Park, Essex County Hospital, Cedar Grove *Delegate*, Winifred Cushing, Paterson General Hospital, Paterson
NEW YORK STATE: *President*, Marcia I. Rosbrook, Memorial Hospital, Syracuse; *Delegate*, Emma L. Feeney, Pratt Institute, Brooklyn
NORTH CAROLINA: *President*, Miss Tiphaine Burgess, Watts Hospital, Durham; *Delegate*, Mrs. Elsie Wilson Martin, Duke University Hospital, Durham
OHIO: *President*, Olive Walker, University Hospitals, Cleveland; *Delegate*, Elizabeth Perry, City Hospital, Cleveland
OKLAHOMA: *President*, Mrs. Margaret Durrett, Oklahoma City General Hospital, Oklahoma City; *Delegate*, Maxine Turner, State Health Department, Oklahoma City.
OREGON: *President*, Mrs. Jean Langille Langley, Univ. T. B. Hospital Portland
PENNSYLVANIA: *President*, Sylvia J. Levie, Mayview State Hospital, Mayview; *Delegate*, Phyllis Sprague, Pennsylvania State College, State College
RHODE ISLAND: *President*, Dorothy Bailey, State Hospital for Mental Diseases, Howard; *Delegate*, Ruth Fitch, R. I. Hospital, Providence
SOUTH CAROLINA: *President and Delegate*, Celia P. Swecker, Steward's Hall, University of South Carolina, Columbia
TENNESSEE: *President*, Elizabeth Terrill, 3817 Lerch St., Belvoir Heights, Chattanooga; *Delegate*, Fairfax T. Proudfit, 1105 Peabody, Memphis
TEXAS: *President*, Rosa Spearman, Board of Education, Dallas; *Delegate*, Dr. Grace Augustine, Texas State College for Women, Denton
UTAH: *President*, Margaret Doidge, Utah Valley Hospital, Provo; *Delegate*, Emma Chapman, Veteran's Hospital, Salt Lake City
VIRGINIA: *President*, Kathryn Heitshu, Medical College of Virginia, Richmond; *Delegate*, Mrs. Helen R. Robertson, Johnston Willis Hospital, Richmond
WASHINGTON: *President*, Eliza Hardman, Seattle Gen. Hosp., Seattle; *Delegate*, Ruth Forsberg, Swedish Hospital, Seattle
WEST VIRGINIA: *President and Delegate*, Mildred Kent, Ohio Valley General Hospital, Wheeling
WISCONSIN: *President*, Mrs. Sarah E. Wenger, Wisconsin Alumni Research Foundation Laboratory, Madison; *Delegate*, Ada B. Lothe, Milwaukee County Institutions, Wauwatosa

Journal OF THE AMERICAN DIETETIC ASSOCIATION

VOL. 18, NO. 1 JANUARY, 1942

Hospital Library

Nutrition and National Defense
Russell M. Wilder, M.D.

Our Own Nutrition Problems
Helen S. Mitchell, Ph.D.

The Importance of Nutrition in the Prenatal Clinic
J. H. Ebbs, M.D., and Winifred J. Moyle, B.Sc.

Feeding Our Mobile Army
Major C. F. Kearney

Research in Army Subsistence
Lieutenant Colonel Rohland A. Isker

A.D.A. Annual Meeting, Detroit, October 19–22

Published by THE AMERICAN DIETETIC ASSOCIATION

Are you paying a hidden cost because your fat smokes at frying heat? Smoke means burning and burning means waste!

If there's a hidden cost in your shortening, better switch to

heavy duty mfb

SHORTENING SHQ HEADQUARTERS

A BLAND ALL-HYDROGENATED SHORTENING MADE FROM PURE VEGETABLE OILS

MADE BY THE MAKERS OF *Wesson Oil*

WESSON OIL & SNOWDRIFT SALES COMPANY

New York • New Orleans • Savannah • Chicago
San Francisco • Memphis • Houston

Hospital

Nutrition and National Defense[1]

RUSSELL M. WILDER, M.D.[2]

I AM impressed and encouraged by this large gathering. Your twenty-fourth Annual Meeting comes at a critical time in the history of this country and the world; and all of you should play heroic parts in that which lies ahead. You form a nucleus of professionally trained persons around which can be mobilized an army of teachers of nutrition to strengthen the defense that is needed behind as well as in the fighting lines. You are one division of a small regular army, so to speak. Another division is composed of workers from the departments of home economics of many colleges and universities. You regulars have long been in the field on the nutrition front.

Those of us in medicine with training in nutritional science are well aware how much this science can contribute to defense. The way, however, to do what we believe needs doing is not without obstruction. Much apathy exists and some resistance. Belief exists that the people in this country are getting all the food they need. Some physicians and persons in places of responsibility, here and in England, have yet to be convinced of the importance of nutrition in defense.

In view of this, it seems to me to be our duty now to mobilize some facts. What is the evidence that many persons are ill fed or that ill feeding can affect the prosecution of the war? The scientist wants evidence. What is it? The statesman wants the facts. What is the case for malnutrition?

To begin with, let me define this problem. It is not one of beriberi, pellagra, scurvy or rickets. Their horrid symptoms are impressive, but their incidence is small. Deficiency disease in its florid form is but an end result of poor nutrition. Its manifestations may be long delayed, depending on the degree of dietary inadequacy, and the period of exposure to bad diet. However, functional debility is apparent long before nutritional disease appears. This may be mild or severe. For instance, Lund and Crandon (1), in a study on a man receiving a diet deprived of ascorbic acid, observed nothing in particular for many months. Then, although scurvy still had not developed, wounds failed to heal and much debility ensued. Was this subject "well" in any sense? Jolliffe, Goodhart, Gennis and Cline (2), and later Williams, Mason and I, with other associates (3, 4), withdrew only one vitamin, thiamin, from the diets of physically healthy female subjects. This resulted in the development of symptoms of neurasthenia. The subjects were not severely ill, but were they "well"? The symptoms disappeared when thiamin was restored to their diets without their knowledge. We are concerned with this zone between healthiness, in which a person is getting enough of all the nutrients he needs, and full-blown nutritional disease. We are not concerned, for the moment, with the final failure, clear-cut nutritional disease, which often is delayed or, in some individuals, may never appear as such.

The term "subclinical" has been employed by physicians to describe states of disease that cannot be recognized by available methods of examination. The term is in disfavor because it too often is used as a cloak for ignorance. I prefer the term "subcritical." However, much syphilis went unrecognized in the past because methods for its detection were then inadequate. So also did incipient tuberculosis. Examination of blood and spinal fluid now brings to light what formerly was hidden syphilis. The roentgen rays do the same for incipient tuberculosis. Are these conditions more real now than they were before we had these newer diagnostic methods? Vegetations, benign growths, on the valves of the heart create "murmurs" which long have made possible early detection of rheumatic heart disease. Persons with these lesions of the heart may live a normal lifetime in fair health, yet no one considers such persons "well." They pay advanced premiums on their life insurance; they are not accepted for the Army.

Precritical malnutrition is what concerns us here. "Nutritional depression," as Jolliffe (2) calls it, is a state of subhealth, not disease. Those affected are not ill enough to be termed patients, or to seek a doctor. When they come to clinics, if at all, they often seek medical aid for some affliction which may

[1] Presented before the Opening Session, American Dietetic Association, St. Louis, October 20, 1941.

[2] Chairman, Committee on Food and Nutrition, National Research Council.

be unrelated to nutrition. In its disguise it causes one to miss the malnutrition.

The first lesion in many cases of malnutrition is biochemical—a disturbance of function, not of structure. Thus, the first symptoms often are functional and difficult to recognize by usual methods of examination. The early anatomic lesions—those that can be seen—are trivial and may be non-specific. This further extends the period of diagnostic difficulty. However, tests for biochemical disturbances are now at hand to aid in diagnosis. Likewise, physicians are beginning, but only beginning, to recognize relationships such as that between "poor folks' mouth" and lack of riboflavin. Physicians, too, are beginning, but only beginning, to relate anemia, papillary atrophy of the tongue, thickenings of the outer surface of the whites of the eyes, fatigue of accommodation, rough skin and other minor abnormalities to nutritional depression. Not that any of these or any other signs alone are specific indications of defects in nutrition. At most, they serve as pieces of the jigsaw puzzle of a diagnosis.

Descriptions of the minor lesions of precritical malnutrition, and of the biochemical procedures or tests to which I have referred, can be found in a series of papers by Kruse (5) and others in the *Milbank Memorial Fund Quarterly*. They are "must" reading for those who contemplate investigation of nutrition. My purpose at the moment is to emphasize that malnutrition is often not observed in the precritical stages because it is not suspected. Discriminating examination and chemical and other tests permit its recognition but they are not applied. Even gross states of nutritional failure have been overlooked until recently by most of us; therefore ordinary statistics from hospitals and clinics give a completely erroneous idea of the extent to which malnutrition contributes to poor health.

EVIDENCE OF EXTENT OF PRECRITICAL MALNUTRITION[3]

Now for the evidence. In January 1939, Stiebeling and Phipard (6) reported the expenditures for food among wage earners and low-salaried clerical workers living in 43 industrial centers in 8 major geographical areas of the United States. On the basis of food purchased the diets were rated as "good," "fair" and "poor." It was found that from 40 to 64 of every hundred families in the survey were subsisting on "poor" diets. These, together with other data contained in a series of reports from the Bureau of Labor Statistics and the Bureau of Home Economics, formed the basis for the widely quoted and much disputed estimate that 45,000,000 people in this country are malnourished. The suggested allowances of nutrients for a "good" diet were lower in several respects than the Recommended Daily Allowances of Specific Nutrients proposed by the Committee on Foods and Nutrition of the National Research Council—the so-called gold standard, or national yardstick of nutrition. Had the food purchases been compared to this yardstick the figure, 45,000,000, would have been much larger.

Surveys of Canadian diets (7) indicated that comparably large proportions of the families in Halifax, Quebec, Toronto and Edmonton were subsisting on diets which were inadequate in one or more essential nutrient factors. The "worse fed was the teen-age youngster." Now it is very true, as McHenry, of Toronto, stated when he made this report, that records of food consumption cannot be accepted as a measure of nutritional status. Nevertheless, and this he also emphasized, the state of nutrition cannot be better than the food consumed.

Early reports (8) from the Selective Service Administration on disqualification under the Selective Service Act showed that 28 per cent of the men examined were being classed as unfit for any military service. Late reports show that 40 per cent of the selectees have been rejected because of physical unfitness. That such percentages of men between the ages of twenty-one and thirty-five years—the years when men should be in prime physical condition—should be so classed is evidence that the physical fitness of the nation at large is impaired at least that much. The women must be equally unfit for bearing children and, as P. F. Williams said, this must influence maternal mortality, stillbirths and neonatal death rates.

Not all the incidents of rejection for the Army can be laid at the door of malnutrition, but many undoubtedly belong there. Tuberculosis, decay of teeth, weak hearts, disordered nerves, poor vision and much else are known to thrive on soil which is eroded by nutritional depression.

It has been demonstrated by my co-workers (3) in Rochester, Minnesota, in studies on induced thiamin deficiency, that impairment of emotional stability and of mental and physical efficiency are the early manifestations of restriction of thiamin. The amount of thiamin (vitamin B_1) in the experimental diets was no less than is found in many of the survey diets graded "poor" by Stiebeling and Phipard. This impairment of function precedes other outstanding and more significant signs of thiamin deficiency by weeks or months. Heart failure, edema and polyneuritis were not observed in the subjects who volunteered, although the restriction of thiamin was continued for an average of six months; yet these are the diagnostic signs heretofore demanded for a diagnosis of thiamin deficiency. Lund and Crandon, at Harvard University, as I have said before, found marked fatigability and poor healing of surgical incisions, rather than bleeding

[3] I am indebted to Dr. Ray Williams for this summary of the literature.

gums or purpura, when the ascorbic acid intake of a human subject was severely restricted for six months. There was some petechial hemorrhage but no purpura or florid scurvy. The subclinical states of pellagra, which have been described by Sydenstricker (9) of the University of Georgia, and by McLester (10) of the University of Alabama, consist largely of "functional" abnormalities, non-specific, and at the same time debilitating symptoms such as physical and mental fatigue, indigestion, constipation and failing memory.

We must learn to recognize these precritical states of malnutrition in our clinics and to apply the laboratory tests which help in their detection.

Among the laboratory tests of value in the assessment of nutritional status are the content of ascorbic acid, vitamin A, carotene, cocarboxylase and pyruvic acid in the blood; the excretion of thiamin, riboflavin and ascorbic acid in the urine; the hematologic status; and tests of dark adaptation. There is need of better standards of reference with all of them. We need more knowledge of what is normal. Reference should be possible to findings in groups which are known to have been adequately supplied for months or years with the nutrients required for optimal nutrition. Reference to findings in groups of persons taken at random has led to much confusion, probably because no random group is normal. What is the incidence of dental defects, skeletal deformities, flat feet, anemia, underweight, functional heart disease, night blindness and inflammation of the gums among well-fed children? What is a normal value for the hemoglobin? Opinion differs. Physicians haven't studied health; their study has been directed at disease.

The influence of diet on the mother and the newborn child was studied in Toronto by Ebbs and his co-workers (11). It is reported in this issue and was also reported before the 1941 meeting of the American Institute of Nutrition. In 380 pregnant women from a low income group, 60 per cent obtained less than 60 gm. protein, 36 per cent less than 0.4 gm. calcium and 82 per cent less than 25 mg. ascorbic acid a day. The average diet contained less than 1 mg. thiamin. The women who consumed "poor" diets were divided into two groups. Those in the first group continued on the "poor" diet; those in the second group did likewise, but were given supplements of eggs, milk, oranges, tomatoes, cheese, wheat germ and irradiated ergosterol. In 34 per cent of the women on the "unsupplemented" diet, but in only 6 per cent of those on the "supplemented" diet, what the obstetricians designated as "poor" or "bad" courses of pregnancy occurred. In 17.4 per cent of the group on the "unsupplemented" diet but in only 2.2 per cent of the group on a "supplemented" diet, miscarriages, premature births or stillbirths occurred. Seventy-two per cent of the babies born of mothers on the "unsupplemented" diet, but only 19 per cent of the babies born of the mothers on the "supplemented" diet, had significant illnesses during the first six months of their lives. Three of the babies of the mothers on poor diets died; none in the other groups. All of the babies received the same food and the same attention after birth, yet six months later one could readily tell to which group the babies belonged, so much healthier were those whose mothers had been better fed.

In a study of 158 pregnant women, Bethell (12), of Ann Arbor, found 53.8 per cent with a true anemia. In 38.6 per cent the anemia was hypochromic in type, in 27.2 per cent, macrocytic. Eskridge and Serwer (13), of Oklahoma City, in a study of 1000 private obstetrical patients, found 16.4 per cent with erythrocyte counts between 3.0 and 3.5 million; 38.0 per cent had values for hemoglobin below 11.9 gm. Labate (14), at Bellevue Hospital, New York, found 48 per cent of 881 pregnant women with erythrocyte counts below 4,000,000 and hemoglobin values below 11.6 gm. for each 100 cc. blood. Macrocytosis was noted in 62.0 per cent and hyperchromia in 7.0 per cent of the cases of anemia.

Mack and her associates (15) have conducted a number of carefully controlled studies of populations in urban and rural sections of Pennsylvania. Physical examinations were made by skilled pediatricians and dentists, and their ratings of nutritional status were correlated with measurements of skeletal and dental status and with roentgenograms, concentration of hemoglobin, erythrocyte counts, concentration of ascorbic acid in plasma and dark adaptation. Of 428 children of medium income families who attended 28 grade schools in a city of 82,000 population (16), it was found that 69.2 per cent received a rating on physical examination of less than 70 points out of a perfect score of 100. Seventy-five per cent obtained dental scores below 70. The skeletal development of 25.1 per cent was delayed more than one year (standard of Todd); 57.5 per cent had hemoglobin values below 11.5 gm. per 100 cc. blood and 13.5 per cent had values below 9.9 gm. When examined with the biophotometer, 41 per cent of the children required more than 1.10 millifoot candle in their "bright light" factor test for dark adaptation and after treatment with a vitamin A concentrate the average "bright light" factor rating was improved, that is, the factor was lowered. In another study (17) of 225 children from families whose annual incomes ranged from $10,000 to less than $1,000, it was found that 61.2 per cent of the children in the highest income group and 50.6 per cent of those in the medium income group, but only 39.4 per cent of those in the lowest income group, had ratings by physical examination higher than 80 points out of a perfect score of 100.

The results of several tests of nutritional status paralleled the results of physical examination. Mack (18) found that 50.3 per cent of the members of 100 urban families had hemoglobin values below 11.4 gm. (Newcomer), and 28.0 per cent had values below 9.9 gm. By contrast, in a group of 100 rural families only 14.8 per cent of the people had values below 11.4 gm. From their several studies, the investigators concluded that there is need of improvement in nutritional status of a considerable proportion of children in all socio-economic groups, with the need becoming more acute as the socio-economic level becomes lower.

Wiehl and Kruse (19), in New York City, examined 342 high school children in families with high incomes, 500 in families with low incomes, and 136 in families of WPA workers. In the high income group only 5.5 per cent, in the lower income group 49.9 per cent, and in the group of WPA workers 55.2 per cent had ascorbic acid values of less than 0.6 mg. per 100 cc. plasma. In the low income group 49 per cent, and in the group of WPA workers 77 per cent had advanced stages of conjunctival xerosis. In the high income group this lesion was rare. It is interpreted as evidence of deficiency of vitamin A. Also, the incidence of vascularization of the cornea, interpreted as evidence of deficiency of riboflavin, in the last two groups of subjects was 42.6 per cent and 38.4 per cent, respectively. In the group of children from high income families corneal vascularization was rare.

Scott and Janeway (20) examined 100 unselected patients admitted to St. Luke's Hospital, New York. Forty-six per cent required more than 0.84 millifoot candle of light in a dark adaptation (biophotometer) test; 33 per cent had values for ascorbic acid below 0.70 mg.; and 23 per cent had values for hemoglobin below 10.2 gm. per 100 cc. blood.

Milam (21), of the Rockefeller Foundation, examined 218 persons in a mill city of North Carolina and found no detectable ascorbic acid in the plasma of 27 per cent. In an additional 34 per cent the values were below 0.3 mg. per 100 cc. plasma. In a group of 34 undernourished children the average value for ascorbic acid in the plasma was 0.28 mg. per 100 cc., but after six weeks of a day camp program this average rose to 1.0 mg. and the children were entirely different, with more pep, more interest and more cooperation evident to everyone. Milam reported data at the National Nutrition Conference in 1941 which indicated a considerable incidence of anemia and of deficiency of vitamin A in the same population.

Lease and Moser (22) examined school children in South Carolina. In the spring of 1941, 79 per cent of a group of children who had been served a school lunch during the previous winter, but only 52 per cent of a group of children who had not been served a school lunch, had values for ascorbic acid above 0.25 mg. per 100 cc. blood plasma. Twenty-four per cent of the "no lunch" group and only 6 per cent of the "lunch" group had values for carotene below 50 micrograms per 100 cc. plasma. A dental examination revealed that 60 of 101 children in these groups under the age of eleven years, had caries of the permanent teeth.

This is heavy going but evidence was demanded.

Jeans (23), of the University of Iowa, determined dark adaptation in three subjects during a period of restriction of vitamin A. He found that adaptation ability decreased continuously during the period of depletion. The amount of decrease was roughly proportional to the duration of the experimental period. His several publications indicated that from 5 to 20 per cent of school children in Iowa have abnormal dark adaptation. Although opinion is divided as to the validity of tests of dark adaptation when applied to the individual, these tests, if properly performed, apparently are valid when applied to groups of subjects.

Josephs and his co-workers (24) of Johns Hopkins University correlated the intake of vitamin A with the values of serum vitamin A and carotene and tests of dark adaptation. They examined children of the Harriet Lane Home and found that 97.6 per cent of those from "well-to-do" homes, but only 6 per cent of those from the poorest homes, had more than 50 micrograms of carotene per 100 cc. serum. In the former group only 50 per cent, but in the latter group, only 12 per cent, had normal dark adaptation.

Minot (25), of Vanderbilt University, examined 380 "normal" children and found 35 per cent of them in the winter and 20 per cent in the summer had values for ascorbic acid below 0.30 mg. per 100 cc. serum. Youmans (26), of Vanderbilt University, examined 900 subjects in rural Tennessee and found that 50 per cent had deficiency of vitamin A as determined by dark adaptation tests, and that 20 per cent had low values for vitamin C in the "blood." In another study, Youmans (27) found that 17 per cent of 54 so-called "normal" subjects and 50 per cent of a group of clinical patients had abnormal dark adaptation (biophotometer readings above 0.71 millifoot candle). After a period of treatment with vitamin A, all of a group of 11 "normal" subjects who had poor readings before therapy were improved to such a degree that the average biophotometer reading was normal (0.45 millifoot candle). All but one of a group of 22 "patients" who had abnormal initial readings (above 0.71 millifoot candle) improved with treatment to a degree that the average readings became normal (0.59 millifoot candle of light).

Crane (28), of the Children's Bureau of the United States Department of Labor, examined 86 school children in Augusta, Maine. Sixty-three per cent

had values for ascorbic acid below 0.4 mg. per 100 cc. plasma and 85 per cent had values below 0.6 mg. Only 41 per cent of the children were free from inflammation of the gums at two examinations, one made in the autumn and the other in the spring.

Clayton (29), of the University of Maine, examined 677 grade school children. In a group of 206 who received a complete examination, 36.9 per cent had one or more defects of bone, 6.8 per cent had defects of the spinal column, 17.9 per cent had defects of the thoracic cage, 24.1 per cent had evidence of early rickets, 18.6 per cent had hemoglobin values below 80 per cent (Dare), 40.8 per cent had ratings of "poor" or only "fair" states of nutrition, and the average number of defective teeth was 8.2. In yet another study (30) of 68 children, she found that 24 were excreting subnormal amounts of vitamin C and 36 had inflammation of the gums.

In Minnesota, Dahl (31) examined 150 children in a school clinic for underprivileged children, and found 18 per cent deficient in vitamin A, as shown by two biophotometer tests. Leichsenring (32), of the University of Minnesota, determined the values for hemoglobin for Minnesota high school girls and found that the mean value (Newcomer) was 12.21 gm. per 100 cc. blood. The mean erythrocyte count was 4.15 million. Boynton and Diehl (33) examined 929 male students of the University of Minnesota and rated them according to the standards of the Selective Service Administration. Twenty-one per cent received a Class I-B rating and an additional 8.5 per cent a Class IV rating. It was the belief of these investigators that many of these young men could be brought up to the required Class A rating by a proper program of diet, rest and exercise.

Jeghers (34), of Boston, who examined with the photometer a group of persons working in his hospital, found that 34.2 per cent had poor dark adaptation.

Fincke (35), of Oregon State College, reported a cooperative study of ascorbic acid excretions for groups of college students. Sixteen and seven-tenths per cent in Montana, 26.7 per cent in Utah and 22.0 per cent in Oregon excreted less than 15 mg. ascorbic acid daily. In the State of Washington, however, only 2.1 per cent were found with low excretions (less than 15 mg. daily).

Abbott (36), of the University of Florida, determined the value for hemoglobin for 620 rural school children (six to ten years of age). Fifty-seven per cent had values less than 9.6 gm. (Dare). In a group of 263 nursery children, 30 per cent had hemoglobin values below 9.6 gm.

That malnutrition is not limited to low-income families has been emphasized by many. Bayer (37), of the University of California, examined 80 so-called normal adolescent girls from "middle class" families in Oakland, at the age of 11.5 years and again at 13.5 and 17.5 years. Their diets provided about two-thirds of the Recommended Daily Allowances of Specific Nutrients. The principal deficiencies were in vegetables, fruits, milk and whole grain cereals. The periodic examination revealed, among other findings, an average of two diseased teeth at the age of 11.5 years, and an increase to an average of nine diseased teeth at the age of 17.5 years.

EVIDENCE FROM ECONOMICS

Less direct, but none the less impressive evidence of malnutrition is provided by studies of consumer incomes in the United States. In 1936, 4,000,000—or 14 per cent—of families received less than $500 a year; an additional 27.5 per cent of families less than $1,000. The average income for the 14 per cent was $312; that for the 27.5 per cent, $758. The figures include the value of foods raised and consumed at home.

It is true that wages have improved since 1936. It is also certainly true that the incomes of very many families are still too low to make it possible to buy enough food for good nutrition.

Data published by the National Resources Committee show that expenditure per person for food is little more than 15 cents a day when the income for the family (cash and in kind) falls below $500, and that the family income must exceed $1,000 to permit a per person expenditure of 30 cents for food. Now may I beg those who remain skeptical of extensive malnutrition to put themselves on a food budget of less than 10 cents a meal. They will find, I am sure, that what happens to them is like that which Williams and I saw happen in our experimental subjects. They will find that ambition and zest for living fall off rapidly. They will discover in themselves qualities which in the past have been attributed to poor heredity—qualities such as shiftlessness, disinterest, irritability and impaired efficiency.

A person can plan a wholesome diet with 30 cents a day, but such a diet will be adequate in thiamin and nicotinic acid only if he uses enriched or whole wheat bread and flour. Even though enriched bread is used he will need to plan his meals more wisely than is common practice. He cannot plan a wholesome diet with less than 30 cents to spend for food a day. I learned this lesson when I visited the home economics class of Lydia Roberts who had put this very problem to her pupils. They had solved it with 25 cents a day to spend per person but they were experts and even they couldn't do with less and secure all that was needed, even when they used enriched or whole wheat flour and bread.

SUMMARY OF THE EVIDENCE

This, then, is the substance of much of the evidence on which is based the case for malnutrition. It is

not all as well controlled or as conclusive as could be desired. Nevertheless the case is strong, so strong indeed that to disregard it now, at this time of national peril, would be folly. Other studies are under way and even more convincing information undoubtedly will come; but let me review:

There is, first, the fact that in 1936 more than 40 per cent of the families of the land had incomes too small to buy the foods they needed. There is, second, the fact that the food purchased by from 40 to 64 per cent of urban workers provided diets which were rated "poor." There is, third, the fact that similar surveys conducted in Halifax, Quebec, Toronto and Edmonton where living is much like that in the United States, yielded results like those made here. Fourth, there is the experimental demonstration with controlled laboratory study that diets comparable to the survey diets rating "poor" are not enough to maintain emotional and physical stability. Fifth, there are the studies of many population groups which reveal much debility, much anemia, low values of vitamins C, B, and A in the blood, and anatomic evidence of malnutrition in the eyes, the skin and teeth. Finally, we have a disgraceful incidence of rejection of men in the prime of life for service in the Army.

CONCLUDING REMARKS

The world has been impressed by the terrific might of the German armies. We have witnessed unheard-of military efficiency. The German soldier seems to possess unusual capacities. Not only has he been able to endure extreme exertion—his poise and fortitude have been remarkable. An American woman traveled by motor through southern Germany on the day that Hitler called for occupation of the Sudetanland. The road was blocked with marching men and all day long her party stood by the roadside and watched the passing troops.

She told me she had never seen such men—tall, broad-shouldered, straight backs, clear skins, lustrous hair, bright eyes—they looked like gods. And at the end of the day they seemed as fresh as in the morning.

Another informant, in Germany in 1940, obtained the same impression. He watched a Labor Battalion at work on the Siegfried line. They looked like football players.

William L. Shirer, whose radio broadcasts from Berlin were so popular, has published his diary. It tells many things the censors wouldn't let him tell in Germany. Let me read this from his notes made in Belgium during the fight there last year:

> Returning from Brussels to Aachen, we ran across a batch of British prisoners. It was somewhere in the Dutch province of Limburg, a suburb, I think, of Maastricht. They were herded together in the brick-paved yard of a disused factory. We stopped and went over and talked to them. They were a sad sight. Prisoners always are, especially right after a battle. Some obviously shell-shocked, some wounded, all dead tired. But what impressed me most about them was their physique. They were hollow-chested and skinny and round-shouldered. About a third of them had bad eyes and wore glasses. Typical, I concluded, of the youth that England neglected so criminally in the twenty-two post-war years when Germany, despite its defeat and the inflation and 6 million unemployed, was raising its youth in the open air and the sun. I asked the boys where they were from and what they did at home. About half of them were from offices in Liverpool; the rest from London offices. Their military training had begun nine months before, they said, when the war started. But it had not, as you could see, made up for the bad diet, the lack of fresh air and sun and physical training of the post-war years. Thirty yards away German infantry were marching up the road towards the front. I could not help comparing them with these British lads. The Germans, bronzed, clean-cut physically, healthy-looking as lions, chest developed and all. It was part of the unequal fight.

In another place Shirer said:

> Morale of the German troops is fantastically good. I remember a company of engineers which was about to go down to the Scheldt River to lay a pontoon bridge under enemy fire. The men were reclining on the edge of the wood reading the day's edition of the army daily paper, the Western Front. I've never seen men going into a battle from which some were sure never to come out alive so—well, so nonchalantly.

Hitler and his henchmen would have us think that this implies a race superiority. I don't believe it. My son, Dr. Thomas Wilder, in Munich in 1936 saw many German troops. The younger ones, he said—those who had passed through the Youth Brigades—were just as Shirer has described them. They had been well fed. The older ones, those who for long years after the World War had suffered malnutrition, were not so fit. When universal military service was resumed in Germany, the rate of rejections for the German Army, because of physical disabilities, was something like what we now are encountering. But Germany early put to work the science of nutrition. The German youth and the German Army are well-fed. Their bread, the *Koummissbrot*, part rye, part wheat, is made of whole grain flour. It is acid in reaction, which further helps to hold its vitamins. The ration calls for a pound and a half a day. Dr. R. R. Williams has computed, I think correctly, that their ration contains more thiamin than that of any other army, mainly because of the large consumption of this whole grain bread. They also have provided for vitamin C, and have fortified their table fats with vitamin A. I was told reliably that they built up a reserve of synthetic ascorbic acid before the war began. It amounted to one hundred tons.

The ration for our Army is also very good. As yet it does not contain a satisfactory bread, but the allowance of meat is very large and meat is quite as good a source of the vitamins of the B group as whole

grain bread. The necessity for adequate rations for the Army is recognized by all. Now comes appreciation of the equal importance of having workers in industry, and the civilian population as a whole, well nourished. For, as was stated in the report of the National Nutrition Conference: "Wars are won or lost according to the health, courage, and calmness of whole populations, and their ability to exert themselves to the utmost—and this is particularly true in modern total warfare."

The safety of our country is at stake. Its defense demands power—all that can be mustered—not only man-power for the armed forces, but man and woman-power for industry, courage and endurance in the home—health and fortitude behind, as well as in the fighting lines.

We cannot risk delay. To neglect to apply the newer knowledge of nutrition would be at our peril. The skies look black ahead. The guessing is that we face at least five years of war. If so, the outcome, I submit, will be determined by the strength and sturdiness we give to all our people now through better food.

REFERENCES

(1) Lund, C. C., and Crandon, J. H.: Human experimental scurvy, and the relation of vitamin C deficiency to postoperative pneumonia and to wound healing. J. A. M. A. 116: 663–668 (Feb. 22) 1941.

(2) Jolliffe, N., Goodhart, R., Gennis, J., and Cline, J. K.: The experimental production of vitamin B_1 deficiency in normal subjects: the dependence of the urinary excretion of thiamin on the dietary intake of vitamin B_1. Am. J. M. Sc. 198: 198–211 (Aug.) 1939.

(3) Williams, R. D., and Mason, H. L.: Further observations on induced thiamine (vitamin B_1) deficiency and thiamine requirement of man: Preliminary report. Proc. Staff Meet., Mayo Clin. 16: 433–438 (July 9) 1941.

(4) Williams, R. D., Mason, H. L., Wilder, R. M., and Smith, B. F.: Observations on induced thiamine (vitamin B_1) deficiency in man. Arch. Int. Med. 66: 785–799 (Oct.) 1940.

(5) Kruse, H. D., Palmer, C. E., Schmidt, W., and Wiehl, D. G.: Medical evaluation of nutritional status. I. Methods used in a survey of high school students. Milbank Mem. Fund Quart. 18: 257–283 (July) 1940.

(6) Stiebeling, H. K., and Phipard, E. F.: Dietsof families of employed wage earners and clerical workers in cities. (Circular 507.) U. S. Dept. Agric., Washington.

(7) A Symposium, Canadian studies on nutrition. Canadian Pub. Health J. 32: 231–270 (May) 1941.

(8) Britten, R. H., and Perrott, G. S.: Causes of physical disqualification under the Selective Service Law: Early indications. Pub. Health Rep. 56: 1017–1021 (May 9) 1941.

(9) Sydenstricker, V. P.: The clinical manifestations of nicotinic acid and riboflavin deficiency (pellagra). Ann. Int. Med. 14: 1499–1517 (Mar.) 1941.

(10) McLester, J. S.: Borderline states of nutritive failure. J. A. M. A. 112: 2110–2114 (May 27) 1939.

(11) Ebbs, J. H., and Moyle, W. J.: The importance of nutrition in the prenatal clinic. J. Am. Dietet. A. 18: 12–15 (Jan.) 1942.

(12) Bethell, F. H., Gardiner, S. H., and MacKinnon, F.: The influence of iron and diet on the blood in pregnancy. Ann. Int. Med. 13: 91–100 (July) 1939.

(13) Eskridge, J. B., Jr., and Serwer, M. J.: Blood studies in private obstetrical patients: report of 1,000 consecutive cases. South. Med. J. 32: 24–30 (Jan.) 1939.

(14) Labate, J. S.: Classification and treatment of anemias of pregnancy. Am. J. Obst. & Gynec. 38: 48–56 (July) 1939.

(15) Mack, P. B., and Smith, J. M.: Methods of conducting mass studies in human nutrition. Pennsylvania State College Bull. 33: 1–91 (Aug. 21) 1939.

(16) Zayaz, S. L., Mack, P. B., Sprague, P. K., and Bauman, A. W.: Nutritional status of school children in a small industrial city. Child Development 2: 1–25 (Mar.) 1940.

(17) Lowther, M. E., Mack, P. B., Logan, C. H., O'Brien, A. T., Smith, J. M., Sprague, P. K., Shaw, J. J., and Dodds, P.: The school lunch as a supplement to the home diet of grade school children. Child Development 2: 203–247 (Sept.) 1940.

(18) Mack, P. B., Smith, J. M., Logan, C. H., O'Brien, A. T., Shaw, J. J., and Dodds, P.: Hemoglobin values in Pennsylvania mass studies in human nutrition. Milbank Mem. Fund Quart. 19: 282–303 (July) 1941.

(19) Wiehl, D. G., and Kruse, H. D.: Medical evaluation of nutritional status. V. Prevalence of deficiency diseases in their subclinical stage. Milbank Mem. Fund Quart. 19: 241–251 (July) 1941.

(20) Scott, J. R., and Janeway, M.: A nutritional study. Analysis of 100 medical admissions to St. Luke's Hospital. New York State J. Med. 40: 440–443 (Mar. 15) 1940.

(21) Milam, D. F., and Wilkins, W.: Plasma vitamin C levels in a group of children before and after dietetic adjustment. Am. J. Trop. Med. 21: 487–491 (May) 1941.

(22) Lease, E. J., and Moser, A. M.: Personal communication to the author.

(23) Jeans, P. S., Blanchard, E. L., and Satterthwaite, F. E.: Dark adaptation and vitamin A; further studies with the biophotometer. J. Pediat. 18: 170–194 (Feb.) 1941.

(24) Josephs, H. W., Baber, M. and Conn, H.: Studies in vitamin A. Relation of blood level and adaptation to dim light to diet. Bull. Johns Hopkins Hosp. 68: 375–387, 1941.

(25) Minot, A. S., Dodd, K., Keller, M., and Frank, H.: A survey of the state of nutrition with respect to vitamin C in a southern pediatric clinic. J. Pediat. 16: 717–728 (June) 1940.

(26) Youmans, J. B.: An assessment of the nutrition of a rural population in Tennessee. Am. J. Pub. Health. 31: 704–714 (July) 1941.

(27) Corlette, M. B., Youmans, J. B., Frank, H., and Corlette, M. G.: Photometric studies of visual adaptation in relation to mild vitamin A deficiency in adults. Am. J. M. Sc. 195: 54–65 (Jan.) 1938.

(28) Crane, M. M., and Woods, P. W.: A study of vitamin C nutrition in a group of school children; clinical and laboratory studies. New England J. Med. 224: 503–509 (Mar. 20) 1941.

(29) Clayton, M. M.: The food habits and physical condition of children in selected communities in Maine. Bull. 401, University of Maine, The Maine Agricultural Experiment Station, July, 1940.

(30) CLAYTON, M. M.: The relation of dietary habits and food resources of Maine people to their state of nutrition with respect to vitamin C. Bull. 397., University of Maine, The Maine Agricultural Experiment Station, June, 1939.
(31) DAHL, E. O.: Prevalence of vitamin A deficiencies; preliminary report. Journal-Lancet. 60: 36–37 (Jan.) 1940.
(32) LEICHSENRING, J. M., DONELSON, E. G., AND WALL, L. M.: Studies of blood of high school girls. Am. J. Dis. Child. 62: 262–272 (Aug.) 1941.
(33) BOYNTON, RUTH E., AND DIEHL, H. S.: The prehabilitation of registrants. V. A university program to prepare students for military service. J. A. M. A. 117: 623–625 (Aug. 23) 1941.
(34) JEGHERS, H.: Night blindness as a criterion of vitamin A deficiency: Review of the literature with preliminary observations of the degree and prevalence of vitamin A deficiency among adults in both health and disease. Ann. Int. Med. 10: 1304–1334 (Mar.) 1937.
(35) FINCKE, M. L.: The ascorbic acid (vitamin C) metabolism of college students; a cooperative study. J. Am. Dietet. A. 16: 325–328 (Apr.) 1940.
(36) ABBOTT, O. D., AND AHMANN, C. F.: Iron deficiency anemia in children. Am. J. Dis. Child. 58: 811–816 (Oct.) 1939.
(37) BAYER, L. M.: The diet of adolescent girls; with special reference to nutritional state and dental caries. J. Pediat. 16: 56–68 (Jan.) 1940.

New Frontiers in Medicine

It may be a little discouraging when I tell you that what we know today in medicine is a mere fragment of what remains to be found out. You will learn gradually that all the minutiae that seem to cover every medical problem and field and stuff to suffocation the cerebrum in the front of the parietal lobes don't need to be all the time on the retina, in the cortex or in consciousness. When you have mastered the fundamentals you can put much of the minutiae down into the hypothalamus. Experience will call these thousand spirits from this vasty deep when you need them if you once mastered them and never forget the fundamentals. I say that without being a pupil of Freud.

Two days ago I listened to a very wise talk by a very wise physician to another group of medical freshmen in another part of the country. Among other things, he said that the medical student should learn early to develop hobbies. Yeah? If you come—and woe to the man or woman who comes in any other way—thoroughly conditioned to the philosophy of labor, then I think that there is just one hobby that is paramount to you and to me, and that is nursing of the habit of using our "noodle" all the time. I never did understand how anybody could identify heaven with leisure, with no difficult work, with the end of the opportunity of learning new things. In that respect it is my considerate judgment that you freshmen—if you endure, if you survive—are entering the most interesting, the most challenging and the hardest of the professions in our times. There is certainly for us, in biology and medicine, as for the Athenians in the days of Paul, something new to be sought and valued every day. . . .

In retrospect, some of the things look simpler than what is facing us now, particularly the teaching of medicine, always a privilege, to be sure. To me teaching is a great privilege, but it would not be so challenging except for the fact that some time, somewhere, in St. Louis, Boston, Chicago, San Francisco or Baltimore, there is going to sit on the freshman bench a man or a woman who will do greater things than Pasteur, and Koch, and Harvey, and Minot. But all the work in conquering these new frontiers cannot and will not be done by those few.

I think that our next generation of physicians will probably do better than did we, provided we retain our sanity, our courage and our freedom. For science is the creation of free men, with superior intelligence, great industry, patience and courage through the ages. In our early training let us really get conditioned to the scientific method. Let us never forget that, except for a few superficialities, every patient meeting us is a scientific problem challenging analysis. If, in addition, we keep both feet on the ground all the time, we will never commit any great sin against science, any grave crimes against the tradition of our craft.

What I have said so far may stir some of my colleagues in the science and art of medicine to say "Carlson himself has gone off the reservation." I know perfectly well that the term "subclinical disease," an assumed ailment that no present objective criteria can detect but perceived by the seventh sense of the soothsayer is also the concept and the method, the universal method, of the medical quack. But while the term "subclinical disease" is a misnomer, we in the science and art of healing must begin our work much earlier. We must not wait for the time when the reserves are so depleted and the person is so sick that he comes to us. We must redefine our concept of health. When that is done on a factual basis, the concept of disease will take care of itself.—*Carlson, A. J., Our proper concepts of health and disease: Are they adequate? J. A. M. A., 117: 1475, 1941.*

Our Own Nutrition Problems[1]

HELEN S. MITCHELL, Ph.D.
Office of Defense Health and Welfare Services, Washington

THE present food problems of the European nations—the blockades, the famines, the rationing, and the use of food as a weapon of war—have been dramatized in the press to the extent that we are apt to lose sight of our own nutrition problems. Compared to these countries America is well fed. But we cannot afford to judge ourselves by external standards. We should judge ourselves by our own potentialities—our resources in food, in technical developments, in scientific knowledge. By that standard we fall far short of our goal. You have all heard the oft-repeated estimate that a third of our people have poor diets, and the number of draft rejectees gives us some indication of the lack of physical fitness among young men. Would that we had accurate and convincing figures to indicate the true nutritional status of our whole population. A few surveys have been made using modern methods of measuring nutritional status, and the results are far from reassuring.

Recent visitors from Europe who have had a chance to observe Nazi soldiers on the march have remarked on their size and physique. The very fact that people notice and comment on this is significant. Our own men who have been selected for service are physically fit and their year or more of training will go far toward making them more so. Not the least part of the benefit they derive is from the food—better meals by far than many have known before. Our armed forces today are fed scientifically, which is demonstrated in the condition of the men after they have been at camp a few months. This scientific nutrition, which is being applied in the feeding of armed forces in several countries today, might well be applied also in the feeding of our civilian population.

Experience abroad has demonstrated the fundamental importance of measures to maintain the health and morale of civilians. While these measures should apply to all classes of the population, the working efficiency of employees in defense industries is at present a matter of special concern. In order to implement our national defense policy, which calls for material aid to Britain and her allies and the strengthening of hemisphere defenses, there is urgent need for greatly increased production of the instruments of modern warfare. Accordingly, plants are being expanded, idle factories placed in operation, new plants constructed, new communities established. Workers of all kinds are needed, and the supply must be drawn in large part from those who have been idle or engaged in various forms of work relief. These new workers in industry will thus be faced with the need of adjustment to harder manual work and more concentrated effort, and should the crisis become aggravated, longer hours and a longer working week.

Changes in occupation, particularly where these require more strenuous and persistent exertion and concentration, impose strains on the human organism, the signs and symptoms of which are familiar to the least acute observer. Experience has already demonstrated that men are breaking under the strain.

No nation, certainly no large nation, has ever really conquered the problems resulting from hunger, the oldest enemy of man. Such an aim is not too high, such a goal is not too difficult, for the people of the United States. It is in line with our tradition of pioneering on new frontiers.

Recently I flew across the continent. As we soared over Texas, New Mexico, and Arizona, I was reminded of all the pioneering that had made this trip possible, and how quickly the results of this pioneering had been accepted and applied in our daily lives. How rapidly inventions and new scientific principles have been made to serve desert agriculture by irrigation, modern transportation, and communication! No sooner has one new device been accepted than it is improved or supplanted by something better. I wondered why the pioneering in the field of nutrition, which offers such great opportunities for making life happier and more productive, has not been more widely accepted and applied by more people. I tried to analyze the reasons.

Is it because, human nature being what it is, we are loath to change everyday personal habits, even when we know we should? We may put new facts

[1] Presented before an Open Meeting of the American Dietetic Association, St. Louis, October 22, 1941.

in our minds but we go right on putting the wrong foods into our stomachs.

Is it because the beneficial results to be obtained by changing living habits, food, exercise, and daily schedules in accordance with modern scientific advice, are not immediately obvious? When experts put new mechanical or physical discoveries to work, the results, measured by increased comfort, convenience, or efficiency are so apparent that we eagerly accept them and pay well for the privilege.

Is it because knowledge and cooperation are necessary before the average layman can understand and use nutrition knowledge for his own betterment? Anyone may listen to a radio or travel by air without understanding the theories of radio or aeronautics. In the physiological sciences experts may discover and point the way, but it takes education and the will to change habits if we are to benefit from recent scientific knowledge of nutrition.

Yes, there are plenty of problems to face in putting nutrition knowledge to work in this country. Not the least of these result from low incomes. Many families just do not have enough cash income to buy the right kind of food and they may not live where they can earn this. Several federal agencies have been attacking this phase of the problem in practical ways. The school lunch program, sponsored and administered by local community agencies, provided one good meal a day for 4,000,000 children last year, and this year is being expanded to reach many more. Low-cost milk is provided in many communities for families who cannot afford the prevailing price. The Food Stamp Plan is being extended to more cities, so that families on relief may make their food dollar go farther toward providing the right food for their families. Wherever state or local nutrition committees recognize the need for introduction or expansion of such programs, they have made every effort to encourage them and cooperate in the projects.

There are also problems of food production and distribution. The relating of agricultural production to the physiological needs of the population comes nearer to being a reality today than at any time since the League of Nations Joint Committee first discussed agricultural planning in relation to nutrition in 1935. The idea was sound then, but few would listen. The United States is today trying to apply that principle. In the new agricultural production program Secretary Wickard has asked American farmers to produce more food, especially protective foods—milk, meat, eggs, vegetables, fruits. These are the same foods which have always been stressed in home-production programs. Several states have at least two-thirds of the farm families pledged to raise as much as 75 per cent of their food and the feed for their farm animals during the coming year. Methods of preservation, storage and transportation are constantly being improved so that more and better foods are reaching markets throughout the country. Assuming for the time being that agriculture, commerce, and industry will do their best to produce and distribute food of the right kind in abundance, there is still much to be done.

People must know food values and how to retain them in food preparation. They must know what foods they need to attain full health and vigor. The primary purpose of the Nutrition Division of the Defense Health and Welfare Services is to see that every man, woman and child in the United States receives this information and makes the best use of it.

Stimulation, Information, and Application, the three key words in this nutrition education program, may be interpreted as follows:

First, we must *stimulate* every citizen to realize his own potential optimum in health and well-being and to strive to attain it by every means at his command. Efforts to stimulate interest in better nutrition have been varied—from nation-wide radio programs dramatizing nutrition problems, to personal consultation with Mrs. Doe about Jane's eating habits—from movies shown in commercial theaters and posters in railroad stations, to flyers in pay envelopes or on cafeteria trays—from national and state nutrition conferences publicized in the daily press, to the simple health check-up at school.

Second, we must *inform* every citizen with regard to the simplest facts concerning food values and human nutritional requirements. Information should be given in a form that can be understood by all—simple, pictorial, translated so that all may understand. (New Mexico has had the folder "Eat the Right Food" translated into Spanish for their large group of Spanish-speaking Mexicans and Indians.) Information is being disseminated through numerous channels which previously have been used but little: through community nutrition courses as well as formal classroom instruction for every student and not just for those in home economics; by means of popular books and pamphlets as well as textbooks; through popular magazines as well as scientific journals; through public libraries as well as those in schools and colleges; in simple pictorial form for some, in more detail for others.

Third, to *apply* nutrition facts in the life of every citizen in this country calls for cooperation from both industry and the consumer. The farmer must produce the right kind of food and transportation and storage must be perfected so that food may reach the retailer in good condition. Distributors always try to provide foods demanded by the consumers. If you can find no fresh greens at market in season, it means people in your neighborhood are not asking for them. If restaurants are not serving well-planned meals and

properly-cooked vegetables, it is partly because patrons do not demand it. The homemaker may apply nutrition principles in her meal planning and preparation, but there is still a duty for the rest of the family—to eat the right food when served. Everyone can find a chance to apply nutrition if he will.

There are pitfalls and dangers in any nutrition program. Some people will exploit nutrition propaganda for personal gain, and there are always plenty of dupes who will listen to quacks and charlatans. Others will take a distorted view, either overemphasizing certain phases or discounting the whole program, taking pleasure in expounding their ideas and ridiculing constructive efforts. There are those who become so enthusiastic about the potential benefits of synthetic vitamins that they have little faith in the protective foods and well-planned meals. They may spend money unwisely on vitamin concentrates when the same money spent for good food might benefit themselves and their families far more. In any surge of interest in a new movement there are these dangers, but the pendulum eventually swings back to center. Interest in nutrition is spreading, and it is the duty of those who are informed to convince the uninformed that the knowledge of nutrition is worth having and applying.

The complicated puzzle of the science of nutrition was still in scattered pieces during the first World War. No one realized then how complicated a puzzle science was starting to put together. Gradually, and with patience and perseverance, scientists have been fitting the pieces together during the last twenty-five years. Today—although still far from complete—some of the picture is taking shape. We do not have to wait for the entire puzzle to be completed before we take advantage of that which is solved.

Calories were a chief consideration in overseas food shipments in 1917, but today we are more concerned with the quality than the quantity. Not more food, but more of the right kind of food is the theme of the present nutrition program. We do not need fatter people, but stronger, huskier people. We do not need more starch and sugar and fat in our American diet, but good protein, adequate minerals and more vitamins. We should choose our calories by the company they keep.

For instance, today we see more clearly the need for certain vitamins to prevent or lessen the vague and ill-defined aches and pains and digestive disturbances which we have been prone to accept as inevitable. So many of the little discomforts of middle age and the so-called early signs of senility are not necessary. One needs only to read the medical journals of the last few years to be aware of the striking results obtained by vitamin therapy. Such cases would not have responded to vitamin therapy unless the subjects had been needing vitamins. These reports merely serve to emphasize the real cause of long-standing deficiencies in which impairment to health became severe enough to come to the attention of a physician.

We may multiply such cases a hundredfold or more if we wish an estimate of the number who are suffering from similar ills and have not consulted a physician or found one who could prescribe the remedy. Many more could be considered borderline cases—not definitely ill, just lethargic and inefficient, showing early signs of some deficiency. These latter are likely to ridicule the idea that eating the right food would make them feel better. They may turn to vitamin concentrates as the only expedient. Better food—more protective foods, prepared so as to conserve their protective qualities—is the long-term answer for most of our population.

Just as modern medical science has conquered diseases that took an enormous toll of life in the past, so modern knowledge of nutrition can build a better and stronger race, with a greater resistance to disease, a longer life-span, and increased mental powers. Our job today is to bring these facts home to our entire population forcefully enough to make people listen and act, but without creating more neurasthenics who "enjoy poor health."

Volunteers, eager to be informed and help others in the national defense effort, are offering their services in the nutrition campaign. It is up to those already trained in the science of nutrition to give their services for teaching, directing, and guiding these volunteers in order that nutrition information may reach people in every community.

This country is on the verge of war, yet many of our people are still complacently unaware of the need for action. Do we need a Dunkirk to arouse us? No! I believe Americans can be aroused now. Let us all wake up to the meaning of better nutrition.

The Importance of Nutrition in the Prenatal Clinic[1]

J. H. EBBS, M.D.
Hospital for Sick Children, Toronto
and WINIFRED J. MOYLE, B.Sc.
Toronto General Hospital

IT IS well known that nutrition plays a greater role in certain periods of life than in others. During infancy and childhood, when growth is rapid, adequate food is essential for proper growth and optimal health. Good nutrition in this period has been stressed by pediatricians for many years and great advances in infant and childhood feeding have been made. Many of the discoveries in nutrition, too, have been in this field. Periods of illness, particularly long illnesses and convalescence, require special nutritional care. Another period of nutritional stress is during pregnancy, when not only the needs of the mother must be satisfied, but also those of the developing fetus.

A fund made available by a Toronto business man for supplying extra food to poor families, also offered an opportunity to observe the effect of this additional food. It was felt that if the food supplements were confined to a group of expectant mothers the effects could be observed not only in the mother but in the infant as well.

Patients attending the prenatal clinic of the Toronto General Hospital, who had not reached the end of the sixth month of pregnancy, and who were not suffering from any major disease, were considered for the study. At the first interview each woman was carefully instructed how to record in the booklet provided the kind and amount of each food eaten for a period of seven days. The importance of recording food between meals and any extras was emphasized, and she was asked to list all food in terms of weight, size, ounces, tablespoons, etc. This record was then referred to the dietitian attached to the clinic, who questioned the patient concerning any items which were not clear and checked amounts stated against amounts bought, number of servings, and so on. As a result of this interview a rating of "Good", "Fair", or "Poor" was given for each patient's diet. This method will be described later. With this diet rating and a record of the family income, number of dependents, and rent, each patient was considered for further study. A total of 90 patients with a low income and a poor diet were selected to receive extra help from the special fund, and these will be referred to as the Supplemented Group. Of the women on poor diets and low income, 120 could not be provided with extra food and therefore remained on their poor diets and will be referred to as the Poor Diet Group. Approximately one-half of the patients attending the clinic were on moderately good diets and had sufficient income to provide a good diet if properly instructed. They were therefore given all possible advice about obtaining an adequate diet and are referred to as the Good Diet Group. There were 170 of these women who were followed in the clinic. A second record was kept at a later period in order to determine a change, if any, in dietary habits.

Each patient was observed at all visits to the prenatal clinic, and the senior resident obstetrician in charge of each patient gave his rating of the condition of the mother during each phase of pregnancy. Neither doctors nor nurses knew to which group the patient belonged.

The following amounts of food were at that time considered adequate during pregnancy: milk, 40 oz. daily; cheese, 1 oz.; one egg; butter and meat daily; liver once a week; two servings of vegetables besides potato daily; one orange or one-half grapefruit, or 5 oz. tomato juice; one-half of all cereals and bread in whole grain form; two teaspoons cod liver oil or its equivalent in concentrate; all salt consumed to be iodized; and iron to be prescribed if indicated. In addition, two tablespoons wheat germ, daily, was advised.

In order to make adequate the diet of the Supplemented Group, we sent the following: 30 oz. milk, one egg, and one orange daily; we also sent weekly two 16-oz. tins factory-canned tomatoes, and one-half

[1] Presented before a Session on Maternal and Child Health, American Dietetic Association, St. Louis, October 22, 1941.

pound Cheddar cheese. At the clinic we distributed a palatable dried wheat germ containing malt and 12 mg. iron in each two tablespoons. Viosterol capsules containing 2000 I. U. vitamin D were given out, with instructions to take one daily. Advice in detail was given to the women in this group regarding the use of this extra food, and instruction in planning the remainder of the diet from the family income was included. The cost of this extra food averaged $25 per patient. The food was sent until the baby was six weeks old.

At the beginning of our study we were faced with the immediate problem of evaluating the diet records in order to provide a basis for placing patients in the three groups. The money made available for the study was for the purchase of food only and did not include expenditure for extra salaries. It was therefore necessary to reorganize the work of the dietary department in order to free a dietitian for attendance at the prenatal clinic for one to two hours on four afternoons weekly. Each student dietitian also assisted by attending all of the prenatal clinics during one month of her year of training at the hospital. This offered her excellent experience under careful supervision.

The patient was interviewed when she returned at the end of the week during which she had kept her record. This second interview included a discussion of each meal to allow an opportunity for checking the accuracy of the amounts of the foods recorded and for possible omissions. The total amounts of some of the foods purchased daily or weekly were checked in relation to the number of people being fed.

Having arrived at the approximate amounts consumed by each patient, the foods were then totaled for the week under the following headings: eggs, meat (to include fish and fowl), milk, cheese, cream, butter, oil, bread (white and brown), cereals, potatoes, vegetables (cooked and raw), fruits (citrus and other), sugar, and miscellaneous. This list formed the basis for scoring the diet as "Good," "Fair" or "Poor," and in turn for classifying each patient under one of the three groups. In order to eliminate errors in judgment and to offset the number of persons interviewing, each record was calculated for protein, fat, carbohydrate, calories, calcium and iron. The material was arranged in such form that data regarding the vitamin content could also be calculated.

Figures for calculation of food intake were chosen mainly from table 13 in *Applied Dietetics* by Frances Stern. In this table the amounts of food eaten are recorded as average or variations from average servings and the values are based on practical measurements rather than 100-calorie portions or 100-gm. servings. They are based on recipes used for clinic patients which are relatively low-cost, and standard recipes as calculated in the book.

Table 1 of our study shows the averages of the analyses of diets in each group. It will be noted that the Poor Diet Group and the Supplemented Group were equally low in every respect in the first record made at the beginning of observation. The average figures of the first diets of patients in the Good Diet Group are moderately good.

In the second record, at four or six weeks before confinement, the average of the diets in the Poor Diet Group is still low, although slightly increased over the first record. It will be noted that the diets of the Supplemented Group and the Good Diet Group have improved markedly, the former by supplying food and education, and the latter by education.

Social workers visited the homes of many of the patients in the Supplemented Group in order to check the consumption of the extra foods supplied. A trained worker visited the homes of a small number of patients in each group and weighed the food after

TABLE 1

Analysis of diets in pregnancy

	PROTEIN	FAT	CARBO.	CALS.	Ca	Fe
	gm.	*gm.*	*gm.*		*gm.*	*mg.*
1st Record:						
Poor Diet.....	56	66	213	1672	.537	10.7
Supplemented—						
Good.....	56	67	212	1690	.562	10.5
Good Diet.....	81	95	261	2206	.886	14.2
2nd Record:						
Poor Diet.....	62	75	232	1837	.746	11.6
Supplemented—						
Good.....	94	111	283	2424	1.61	24.3
Good Diet.....	92	113	293	2521	1.30	18.3

it had been estimated and recorded. The estimate of fat, carbohydrate and calories was found to be slightly low, since it did not include such items as bacon fat, drippings and domestic shortening, etc. On the whole, however, the records were found to be reasonably accurate.

The percentage of patients in each diet group who ate a given amount of protein is shown in table 2. The improvement in the records of the Supplemented and the Good Diet Groups will be noted. It was found that 60 per cent of the patients in the Poor Diet Group were taking less than 60 gm. protein daily. In the Supplemented Group, 78 per cent were getting more than 80 gm. daily after the extra food was supplied. Advice to those in the Good Diet Group with regard to increasing the consumption of milk, eggs, meat, and cheese resulted in a substantial increase in the percentage of patients taking a reasonable amount of protein.

In the Poor Diet Group, 36 per cent were getting

less than 0.4 gm. calcium daily (table 3), and in the Supplemented Diet Group, 86 per cent were getting less than 0.8 gm. calcium daily, according to our estimated figures in the first record. The addition of milk and cheese to the diet of the Supplemented Group improved the second record greatly. All but two per cent were getting more than 0.8 gm. Again, the effect of education was noted in the Good Diet Group, in which all but two per cent had increased the intake of calcium above 0.8 gm. daily.

The figures in table 4 are based upon the consumption of citrus fruits and tomatoes only. They do not include any sources of vitamin C in the general

TABLE 2

The amount of protein eaten daily by the three diet groups

PROTEIN, GM.	20-39	40-59	60-79	80-99	100+
	%	%	%	%	%
Poor Diet:					
1st Record	9	54	33	7	0
2nd Record	4	34	48	14	0
Supplemented Diet:					
1st Record	10	44	41	5	0
2nd Record	0	2	20	44	34
Good Diet:					
1st Record	1	22	40	26	11
2nd Record	0	2	24	56	18

TABLE 3

The amount of calcium eaten daily by the three diet groups

CALCIUM, GM.	0-.40	.40-.80	.80-1.2	1.2-1.6	1.6+
	%	%	%	%	%
Poor Diet:					
1st Record	36	45	16	3	0
2nd Record	25	36	28	7	4
Supplemented Diet:					
1st Record	30	56	10	4	0
2nd Record	0	2	10	33	55
Good Diet:					
1st Record	8	38	32	18	4
2nd Record	0	2	37	45	16

diet. It will be noted that the economic level of even the best group would not allow them to purchase much more than 50 mg. vitamin C as citrus fruit or tomatoes.

In table 5 the estimated vitamin B_1 content of the average Poor Diet is shown, with the amount added by the supplemental food.

The average weekly income per person of the families in this study was $3.34 in the Poor Diet Group, $2.64 in the Supplemented Diet Group, and $6.02 in the Good Diet Group; 44 per cent of the Poor Diet Group and 48 per cent of the Supplemented Group were receiving welfare relief.

In previous pregnancies the number of miscarriages, stillbirths, and premature births experienced in the Supplemented Group had been slightly greater than in the Poor Diet Group, but much greater than in the Good Diet Group.

Observations of each patient were made by the senior obstetrical resident during the whole period

TABLE 4

The amount of vitamin C from citrus fruits and tomatoes received daily by the three diet groups

VITAMIN C, MG.	0	5-20	25-50	55-75	80-100
	%	%	%	%	%
Poor Diet:					
1st Record	33	49	17	1	0
2nd Record	23	46	31	0	0
Supplemented Diet:					
1st Record	43	41	15	1	0
2nd Record	0	2	48	50	0
Good Diet:					
1st Record	12	34	46	5	3
2nd Record	2	32	56	8	2

TABLE 5

Estimated vitamin B_1 content of the average poor diet

	I.U. VITAMIN B_1	
Original Diet:		
8 oz. Potatoes		100
8 oz. Bread—80% White		54
1.5 oz. Cooked Oatmeal (7.5 gm. dry)		13
10 oz. Milk		60
2.7 oz. Meat (beef 6 times, pork once)		67
4 oz. Vegetable		23
0.5 oz. Egg ($\frac{1}{4}$ egg)		7
		324
Supplemented by:		
0.5 oz. Wheat Germ	100	
30 oz. Milk	180	
1 Egg	30	
1 Orange	20	
4.5 oz. Tomato	34	
1 oz. Cheese	5	
Additions to Meat, Vegetable and Whole Wheat Bread	86	455
Total		779

of confinement in the hospital. As stated before, the group to which each patient belonged was unknown to the medical and nursing staff. The obstetrical and pediatric observations of this study have been described elsewhere.[2]

[2] Ebbs, J. H., Tisdall, F. F., and Scott, W. A.: The influence of prenatal diet on the mother and child. J. Nutrition 22: 515, 1940.

During the prenatal period it was found that there were twice as many cases of anemia, toxemia, and threatened miscarriage in the Poor Diet Group as in the other groups. There were many more miscarriages, stillbirths, and premature births in the Poor Diet Group, and the number of cases of uterine and breast infections was more than twice as great in this group.

The obstetrician's rating of the whole course of pregnancy is shown in table 6. The women who had been on good diets or who had been sent extra food enjoyed better health and were in every way better obstetrical risks than those who had remained on poor prenatal diets. The number of patients on

TABLE 6

Obstetrician's rating of course of pregnancy for each group

	POOR DIET	SUPPLEMENTED GOOD	GOOD DIET
	%	%	%
Good—Fair	66	94	85
Poor—Bad	34	6	15

poor diets who were given a "poor" or "bad" rating by the obstetrician was many times greater than in the better-fed groups.

The average duration of labor was five hours shorter in the Supplemented Group than in the Poor Diet Group. The average birth weight of the babies born of mothers in the Poor Diet Group was 7 lb., 10 oz.; in the Supplemented Group, 7 lb., 7 oz.; and in the Good Diet Group, 7 lb., 6½ oz. Six weeks after birth only 59 per cent of the babies of women in the Poor Diet Group were being successfully nursed, while 86 per cent of those born of mothers receiving the Supplemented Diet were breast-fed. During the first six months of life there have been more illnesses in the babies born of mothers in the Poor Diet Group than in the other two groups. Two infants in the Poor Diet Group died of bronchopneumonia and one as a result of prematurity; there have been no deaths in the other groups.

SUMMARY

The method of study of 400 women attending a prenatal clinic has been described. By supplementing the diets of approximately one-half of the women on poor diets and by educating another group of women so that they ate moderately good diets, three groups were formed for observation throughout pregnancy and convalescence. The number of complications affecting the mothers and infants was much greater in the Poor Diet Group; there were more miscarriages, stillbirths, premature births and infant deaths. The incidence of illness was greater among babies born of mothers on poor prenatal diets, and the general condition of the babies at six months of age was found to be inferior in this group.

Practical instruction in nutrition should be a part of all prenatal clinics and in the general management of expectant mothers, particularly those in the low-income group.

ACKNOWLEDGMENTS

We wish to acknowledge the work of the dietitians of the Toronto General Hospital who assisted with the dietary records in this study.

The funds were made available through and administered by the Visiting Homemakers Association of Toronto.

The Obstetrical Department, Toronto General Hospital, and the Research Department, Hospital for Sick Children, cooperated in the study.

We wish to thank Miss Elizabeth Castle of the Social Service Department, Toronto General Hospital, for her valuable assistance.

Drugless Healers

The other drugless healers, particularly the chiropractors, have sat at the feet of the osteopaths for instruction in the ways and means of obtaining legal advantage. They employ similar tactics and are no less alert to opportunities. They recognize the importance of setting up independent examining boards or of gaining influence on the board of medical examiners. Their legislative efforts are planned on that basis. While they have not succeeded as well as osteopaths in this direction, their efforts are not likely to decline. If the standards of medical practice are to be maintained at a reasonably high level and if the public is to be protected from legally recognized drugless healers, these attempts at gaining legislative advantage must be expected and fought with intelligence and vigor.—*Neal, J. R., The status of drugless healers in the United States, J. A. M. A., 116: 1737, 1941.*

Feeding Our Mobile Army[1]

MAJOR C. F. KEARNEY[2]
Subsistence Branch of the Supply Division, Office of The Quartermaster General, War Department, Washington

PICTURE the United States Army of today—an Army of 1,500,000 men equipped to wage a modern war. A war in which speed and mobility are paramount. During the last war it was remarkable and unusual for troops to advance or move over twenty miles per day and most of the war was fought from stabilized positions with the front lines unchanged sometimes for days.

Not so with the new mobile Army. All troops are motorized or mechanized, whether they are swiftly moving armored forces, or are being transported by plane. Troops, capable of striking an enemy with lightning-like rapidity, now cover 200 or more miles per day. They do not attempt at first to establish positions, but to break through the enemy at various points with planes and tanks followed closely by the Infantry in scout cars, command cars, "Jeeps", and trucks.

Now, as with the old, slower-moving army, supplies must keep pace with the fighting elements, supplies of all kinds including ammunition and gasoline, and there must also be food. For these soldiers are human machines—not Robots. Science has found no way to keep men fighting with stamina and courage without a constant supply of wholesome, nutritious, and energy-building food. The United States Army has never been one to live off the land it is occupying or passing through, and has never been a scavenger. Therefore, a system of food procurement in the rear areas and shipment to the front is necessitated.

In our planes, tanks, armored cars, and on the persons of the soldiers must be carried highly concentrated rations such as Colonel Isker has described, and which require small space and are light in weight. These emergency rations must be compact and occupy as little room as possible in order that valuable space can be utilized for ammunition, guns, gasoline, and men. But as the term implies, these are strictly emergency rations and are not to be used unless the regular rations have not arrived or because the situation presents such difficulties as to make the service of normal rations impossible.

These regular rations are very similar to the food eaten by the soldier in peacetime except that in the Theater of Operations, or Forward Zone, they are probably of non-perishable or semi-perishable nature. If possible, we give our soldiers three hot meals a day. This is not usually possible during actual combat but it is rarely impossible to provide at least two warm meals, breakfast and supper, to be delivered and eaten under cover of darkness, and fresh sandwiches, doughnuts, cookies, and fruit at the noon meal.

Equipment has progressed with the food. For example, today's Army range uses gasoline as a fuel and what is even more important, functions efficiently with high octane gasoline. Two men can carry one unit and two or more units can be lashed together on trucks in order that cooking can be accomplished while on the move. The range is most compact and complete, and the burner can be readily adjusted to different heats. A separate burner is used to heat water.

The modern mess kit appears at first to be the same as that used in the last war, but note the innovations. The lid is now divided into two sections, serving to keep foods separate, and the old juggler's act, balancing the lid while carrying a cup of hot coffee in the other hand, is no longer required.

To demonstrate the ingenuity and resourcefulness that is required, I quote the following: "In April, 1938—about one and one-half years before Hitler invaded Poland—the United States Army Air Corps conducted tests in the vicinity of Balmorhea, Texas. Food rations and forage were parachuted to a platoon of Cavalry located in terrain too mountainous for the safe landing of an airplane. A thousand pounds of supplies were dropped from Army bombers every

[1] Read before a General Session, American Dietetic Association, St. Louis, October 20, 1941.

[2] Major Kearney graduated from the U. S. Military Academy at West Point in 1929. He was then stationed at Fort Douglas, Utah, and later with the Infantry in the Philippines. Upon his return he was ordered to Fort Sheridan as a Quartermaster Officer and subsequently attended the Army Subsistence School and the American Institute of Baking, Chicago. At present Major Kearney is Commandant of Third Corps Area Bakers and Cooks School, and in the Subsistence Branch of the Supply Division, Office of The Quartermaster General, War Department, Washington.

day for four days. These supplies were packed in special containers supported by individual parachutes. One day's supply consisted of 490 lb. hay, 300 lb. oats, 200 lb. wood and 160 lb. rations. Among the rations were four dozen eggs nestled in a special container. It was found that these were parachuted to the rough terrain without a single egg being broken; only two eggs were slightly cracked." The Germans, too, have used this method of parachute food supply in several of their campaigns.

But I have been talking about the food supply to men during actual combat or during simulated combat known to us as maneuvers. I would now like to give you a picture of the problem during present times.

A young man enlisting in the Army today or a selectee after Induction is sent to a Reception Center. There are 29 Reception Centers scattered throughout the continental United States. Here he receives his final physical examination and his initial inoculations and vaccination. He is then fitted with his uniforms. With the aid of machines he is classified as to his particular specialty, based upon past experience and adaptability. Finally he is assigned to a special branch of the Service, selected as a result of his classification.

During this time, of course, he must be fed. There are from 500 to 3000 men going through a Reception Center at one time. They are fed in a central mess hall in which the food is served cafeteria style. Because these centers are permanent, they are equipped with the most modern labor-saving devices, such as steam-cookers, deep-fat fryers, mixers, potato-peelers, dishwashers, ranges, and chill rooms, and resemble a modern commercial cafeteria. Stainless iron or steel-divided compartment trays are utilized.

From the Reception Center men proceed by rail to Replacement Centers in groups. If the distance requires it, a freight car is transformed into a kitchen where hot meals are prepared by Army personnel, using the gasoline ranges mentioned previously.

Each branch of the Army has one or more Replacement Centers—there are eighteen in the United States. It is here that the new soldier receives his basic military instruction. This basic training, which is sandwiched in with comprehensive specialist training in the particular division of the branch assigned, covers a period of thirteen weeks. These men also must be fed, in units of 250 men per mess. It is here that the training of cooks, bakers, and mess sergeants is begun. For each group of 250 men it is necessary that at least five cooks and one mess sergeant be trained to keep up the necessary quotas. Men selected for this training are those who have been cooks, chefs, or stewards before entering the Army or who are adapted for this vocation. The training is usually conducted by Bakers and Cooks School personnel. The kitchens at a Replacement Center are the same as those used in the organizational camps. They contain regular ranges, ice boxes, deep-fat fryers, pans, etc., and the food is served on china and eaten with ordinary knives, forks, and spoons.

After thirteen weeks the men are sent to establish complete new organizations or as replacements for existing units. Within their organizations they become part of a detachment or company which is capable of subsisting itself if need be. These units range from 60 odd to 250 enlisted men.

The Subsistence Branch of the Office of The Quartermaster General is charged with the procurement of the food, the delivery of the food to the consuming units, and the actual preparation through their Bakers and Cooks Schools. This is true both in time of peace and war.

The job of feeding 1,500,000 men, which calls for the preparation of 9,000,000 lb. food every day is no small chore, but Army cooks take it in their stride and get up every morning ready to prepare another 9,000,000 lb. before sundown. One beef is consumed every 54 seconds day and night. But let us start at the beginning with the procurement of this food and follow it right on through the mess hall to the soldier. Since it must be procured before it can be shipped, distributed and served, we will start with the purchasing of this tremendous amount of food.

Food standards are established and the types and quantities of foods to be purchased determined. The Quartermaster Corps maintains huge purchasing and storage depots strategically located throughout the United States. With the receipt of requisitions or orders to purchase, these depots initiate bids and the wheels start moving. The items are either purchased and stored or are contracted for shipment to the various camps. In addition to normal needs, food must also be purchased and stored against possible emergencies. Much thought is also given to the proper time and seasons for purchasing various supplies and in some instances future orders are contracted for a year's anticipated needs. One of the great recent developments in Army feeding has been the establishment of 29 market centers throughout the United States intended primarily for buying fresh fruits and vegetables, and which recently have been extended to include poultry, butter, eggs and cheese. The old method was to accept bids for 30-day needs, but under this system the bidder did not actually know how many eggs or how many pounds of butter contracted for would be demanded. It led to considerable speculation and the building up of a fictitious demand. In many cases it spoiled the market by causing procurement officers to bid against one another should they be interested in the same carload of produce. The present set-up eliminates all of this. All food buying is coordinated

through a central headquarters in Chicago, charged with the purchasing of fruits, vegetables, poultry and dairy products through regular marketing channels.

Let me give you an example of how this works. Supposing Cincinnati gets a bid on a carload of potatoes. They transmit the offer by teletype to Chicago (all of the marketing centers are connected by teletype) and the Chicago office says buy or do not buy, according to the needs of a given section of the country. Suppose some camp in Arkansas needs that carload of potatoes. If so, the order doesn't have to come through Chicago. Chicago merely tells Cincinnati to order the carload shipped directly to the Arkansas camp where it is needed. I am speaking of vegetables, of course, and Chicago is the logical center for buying these because it is centrally located. Flour is also bought through Chicago and San Francisco because these cities are near the milling centers. However, this doesn't discriminate against any area in the United States—the policy is to buy as closely as possible to the spot at which the food will be eaten. After all, it is the taxpayers' money that is being spent, and the law requires that bids be submitted on all food that is bought. Canned fruits, by the way, are bought almost entirely by the San Francisco Depot simply because a great share of the fruit-growing industry is located near there.

As I said earlier, we have recently extended this marketing center buying to poultry, butter, eggs and cheese. In fact the first Corps Area to adopt this commenced buying through their marketing centers in July. By October 1 the last Area had come under the new system. When you understand the leaps and bounds with which this feeding problem has grown, you will see that the marketing center system becomes more advantageous as the Army expands. For instance, in May we spent $1,150,000 for fresh fruits and vegetables. By June it was $1,450,000; for the month of August it had reached the unbelievable total of $1,990,000. It is now above the $2,000,000 mark and still going strong. This increase is not due entirely to the larger number of the armed forces; by means of better marketing more fresh fruits, vegetables, and produce can now be purchased at a lower price and as a result nutrition standards are improved.

Let me digress for a minute to mention surplus crops. The Quartermaster Corps is naturally taking into consideration surplus conditions and it tries to vary its ration so as to make additional purchases of the surplus commodities if they can do so without upsetting the balanced ration.

Now that you have some idea of the tremendous procurement job which the Quartermaster Corps faces, let us take up the next logical step—the transportation of this food. I told you that a purchase in Cincinnati, when no other purchase in the United States would be made, was routed directly to the consuming point rather than around through Chicago. That is true in every case whether the product bought is perishable or non-perishable. Of course the same methods of transportation that apply in the commercial field apply to the movement of Army food. The locally produced commodities move by rail, motor truck, or boat, just as they do in the commercial field. Perishables must move in refrigerator cars, trucks, and boats; other products move by regular freight in any of the aforementioned ways. Take the case of a carload of lettuce. If it has to be shipped any distance, it will probably travel in refrigerated rail cars to certain railheads; then it will be trucked to the Divisions; then broken down to Regiments, and again broken down to the individual organizations which will consume it.

Of course, you realize that Army requirements are rather rigid, but they are necessary. One office may be buying for half a dozen separate camps. It must buy a specific quantity for each. It cannot deal with a mixed variety of packings or a mixed set of grading. Uniformity is essential. A decision must next be reached as to what kinds of foodstuffs are needed. This calls for the preparation of daily menus.

It is empty comfort to know that the soldier "gets enough to eat," if at the same time we cannot be assured that the quality is uniformly good and the dietary adequate.

The Commanding General of each Corps Area decides who shall be responsible for the preparation of menus in his area. This is usually the Commandant of the Corps Area Bakers and Cooks School. Menus are normally prepared 60 days in advance of their use and contain not only a list of the components but also the amounts needed for units of 100 men. The same menu is followed in every mess on the same post, but one post may differ from another. This permits the use of local fruits and vegetables at lower prices, and also means that the Army does not buy in such huge quantities as to penalize the civilian consumer. Dietary idiosyncrasies of troops from different sections of the country can also be considered. The menus are then sent to the Subsistence Branch of the Office of The Quartermaster General in Washington for analysis and comments.

We are often asked how the menus are judged as to their adequacy. The first considerations are practical ones: Is sufficient food being furnished? Irrefutable evidence is the gain in weight of the soldiers. Is the cost within the ration allowance? (a ration is the amount of food furnished to one man for one day, and there is a long list of items with a definite quantity of each, upon which the money value of the daily Army food is calculated). Are

the menus varied enough to avoid monotony, yet simple enough to be practical for preparation with Army equipment under Army conditions? Are the menus flexible so as to allow substitution of one food for another according to available supply?

The next consideration is the actual nutritive value of the Master Menu for each Corps Area. Specialists calculate every essential component for calories, protein, fat, carbohydrate, vitamins, and minerals. Allowances are made for waste and refuse in the kitchen and on the table. As far as knowledge permits, losses due to preservation and preparation of foodstuffs are deducted. Your President, Mary I. Barber, is one of these specialists and it is impossible to calculate her worth. If necessary, suggestions are made for additions or changes in amounts, in order to bring the menu in line with the recommendations of the Nutrition Committee of the National Research Council.

The Washington office must also decide what food will be sent with troops leaving the United States. In the tropics we must have a ration which will withstand high temperature and humidity without refrigeration. In arctic regions, for example, certain canned vegetables cannot be used because of their susceptibility to spoilage upon freezing. This condition demands the use of dehydrated vegetables. Use is also made of powdered eggs and milk, and dehydrated yeast. Under all conditions we endeavor to furnish the soldiers a well-balanced diet and are alert to progress in the science of nutrition.

In a further effort to improve the composition and quality of the meals, a series of monthly model menus are now prepared in Washington for the guidance of the officers in charge of menu making in the various Corps Areas. Their adoption in the same or substantially unchanged form will be recommended because they furnish great variety along with an ample provision of nutrients.

The next logical step is the preparation of food. The rapid increase in the size of the Army has created a tremendous shortage of trained mess sergeants, cooks and bakers. In normal times there is one Bakers and Cooks School in each Corps Area and one in Hawaii, Panama, and the Philippines. Branch schools have been established under supervision of the parent schools until now there are 51 in the United States. The faculties are composed of officers and instructors skilled in teaching theory and practice. Instruction is given in mess supervision, nutrition, accounting, menu making, and the proper methods of modern cooking and baking. Students are taught to prepare appetizing meals with emphasis on non-destruction of vitamins, and other principles of cooking. In the course of one year since the expansion program, these schools will have trained approximately 68,000 cooks and bakers. Working through our schools as agencies, considerable assistance in training has been provided by civilian agencies. The most beneficial of these has been the National Live Stock and Meat Board which has given invaluable aid by training soldiers in meat cutting and other phases of the use of meat. They have allotted time and money to us for almost a year now, and expect to continue their work. We certainly appreciate their splendid effort.

The Quartermaster Corps also operates numerous bakeries of which there are two types. Those which serve the garrison are most modern in design and equipment and vary in size from those which supply bread for 3000 men to those which provide for 70,000. In these bakeries the very latest type of labor-saving machinery and most modern baking methods are used.

In order to keep up with the times, one of our large bakeries has been baking bread, using either enriched flour, fortified or vitamized yeast, or primary growth brewers' yeast on different days. Samples are then sent to various laboratories for B-complex and mineral assays. This is purely an experiment, but the information garnered will be invaluable should we find that our menus are low in the B vitamins and need to be stepped up.

The second type of bakeries provides bread for soldiers in the field. For example, during the recent maneuvers in Louisiana, field bakeries were established to bake upwards of 200,000 lb. bread per day. Close to 9,000,000 lb. bread was baked during the maneuvers. At present we are attempting to develop more efficient and modern field bakery units and extensive experimentation is under way. Such units must be highly mobile or portable in design.

We realize it is one thing to plan adequate menus, another to have them well prepared, and still another to get the variety of items off the table and into the man. Our sincere hope is that food habits will be modified and improved where this is desirable, and also that better food habits will be carried back to civilian life when the men go home. They come from different racial backgrounds, from homes of varying incomes and degrees of culture; men with opposite sets of food habits, tall men, short men, fat men, thin men—all living together in groups under more or less standardized conditions.

The science of warfare is continually progressing. The science of supplying food to armies is also advancing. The science of nutrition, too, is marching on. The Quartermaster Corps is keeping pace and providing meals for our Mobile Army which will keep it in the enviable place it now holds—the best-fed army in the world.

Research in Army Subsistence[1]

LIEUTENANT COLONEL ROHLAND A. ISKER[2]
Quartermaster Corps, U. S. Army

THERE is little need for me to discuss the necessity for subsistence research with members of the American Dietetic Association. You are, however, interested in how the work at the Subsistence Research Laboratory ties in with the actual feeding of the Army.

A few years ago it became apparent that many problems were arising in connection with Army nutrition which had no counterpart in industry and some agency had to be provided for studying them. Accordingly, the staff of the Subsistence School was enlarged, laboratory facilities provided, and the school became also the Subsistence Research Laboratory. This body thus became something of a small counterpart of one of our universities, and like the staff members of a university, the staff members of the laboratory carry on research, conduct classes, write manuals and bulletins and write and revise specifications.

Even if the staff grew to the size of a large university, however, it could not effectively solve all its problems alone. American industry has cooperated to the fullest extent by furnishing technical information and advice, laboratory and plant facilities and test materials. Universities, research institutions and individual professional men and women have given freely of their time, knowledge and research facilities to further our work. We owe an enormous debt of gratitude to all these agencies, for without them our task would be difficult indeed.

Our laboratory is a unit set up within the Quartermaster Corps to form a technical link between the Army and industry. We must keep abreast of all developments in the food industry and take note of these in our specifications and bulletins. We must learn from industry what food products are available in sufficient quantities and see where they fit into Army needs. We must tell industry just what the Army needs which is not now available and work with industry in making it available.

One of the products developed in cooperation with industry is a 6-pound sterile luncheon meat. A 12-ounce sterile luncheon meat has been on the market for several years, but the 6-pound can represents something new which many packers claimed would be impossible to produce without an overcooked flavor in the finished product and a tremendous shrinkage. One firm, however, began to work with us and several others followed suit. It was found that by applying strict sanitation measures, by carefully controlled retort temperatures and care in preparing the raw material, a very satisfactory product could be produced with not more than a 10 per cent shrinkage and an excellent flavor. At present the Army, Navy and Federal Surplus Commodities Corporation are purchasing large quantities of the 6-pound luncheon meat.

Another example is the present "Defense" ham. We had to have a ham that would stand more rough handling and have better keeping qualities than the ordinary commercial ham. Hundreds of hams were pumped with varying degrees of pickle and smoked from 8 hours to 8 days at an internal temperature of from 115 to 140 degrees F. It was our opinion that a temperature of 140 degrees F. during smoking would kill trichina and render the ham less dangerous if improperly cooked. It was found that this high internal temperature broke down the tissues and lowered the keeping qualities below that of the regular commercial ham. The best results were obtained by pumping with a 100 per cent solution and smoking for 48 hours at an internal temperature of 122 to 128° F. The first shipment of this ham was not very successful, partly due to improper handling and the fact that inspectors were not familiar with hams over one month old. Hams were therefore rejected due to mold growth and in some cases a development of slime on the outside which is to be expected whenever hams are removed from cold storage and not used at once. Many of the rejected hams were sent to the laboratory, cleaned with vinegar water, roasted, and eaten with relish by the laboratory personnel and visitors. There was, however, a definite weakness in this ham which had to be over-

[1] Read before a General Session, American Dietetic Association, St. Louis, October 20, 1941.

[2] Lieutenant Colonel Isker was commissioned as Second Lieutenant in the Regular Army in 1917 and was formerly attached to the U. S. Cavalry. Following training in the Quartermaster Corps Subsistence School he was placed in charge of the Subsistence Research Laboratory in Chicago.

come and a meeting was therefore called at which at least 20 packers of cured meats were represented. It was decided to bulk the hams in salt from 2 to 4 days, thereby giving the outer surface a good coating of salt as a preservative, after which they were to be smoked for 72 hours at an internal temperature of 128° F., to reduce the moisture content. The hams were then to be packaged as soon as possible to avoid mold growth. Hams are now being processed by this method with much better results.

More recently a Special Field Ration has been devised to be used by the highly mobile units, such as mechanized or parachute troops, who operate far from a base of supply and must therefore carry everything they need with them. Since they require so many things, each item must be made as compact and light as possible. This points to the necessity of a dry ration to replace the canned Field Ration, as the water in the canned products takes up valuable space and adds weight. This ration must withstand the hot climate of the tropics and the freezing weather of Alaska. It must keep in any climate without refrigeration for one year and be packaged so that a meal can be carried in the soldier's shirt pocket. As this ration is to be used by the troops in combat and when under great nervous strain, we feel that it should be as nearly perfect as possible.

The clinical tests on this new ration were conducted by Dr. Ancel Keys at the University of Minnesota with troops from Fort Snelling. Our first ration consisted of a 4-oz. pemmican biscuit for each meal, the ingredients of which were selected with full consideration of their nutritive value. Fifty of these rations were sent to Dr. Keys for tests. The first meal tasted good; the second meal was not so appetizing; while on the second day the soldiers ate only enough to keep body and soul together. The physical condition of the men, too, at the end of the second day was most unsatisfactory.

A second test was then made with the same biscuit supplemented by a confection. The results the first day were somewhat better, but the second day we were back where we had started. The men simply would not eat the ration and it was decided to toss the whole thing out of the window and start all over, for the best balanced ration is of no value unless the men will eat it.

If you develop a ration, your own likes and dislikes are reflected in that ration. You may eat it and like it the first day. The second day you try to make yourself believe it is good, and you can't understand why the soldiers refuse to eat it. But in this case a neutral party conducted the tests and presented us with scientific proof that it was not a suitable ration.

Our ration lacked variety. To attain this as well as to maintain value, the size and weight had to be increased. Sufficient room was allowed in the shirt pocket for this increased size. The next ration devised offered variety and consisted of the following:

A UNIT (*Breakfast*)		
Biscuit		
(a) Pemmican	2.3 oz.	325 calories
(b) Graham	1.7 "	212 "
Modified Malted Milk Tablets	2.0 "	239 "
Canned Veal Loaf	4.0 "	237 "
2 pkg. Soluble Coffee	0.2 "	—
4 cubes Sugar	0.7 "	80 "
1 stick Gum	.14 "	—
	11.04 oz.	1093 calories
B UNIT (*Dinner*)		
Biscuit		
(a) Pemmican	2.3 oz.	325 calories
(b) Graham	1.7 "	212 "
100 per cent Dextrose Tablets	2.0 "	260 "
Canned Luncheon Meat	4.0 "	332 "
Tube of Bouillon	0.63 "	50 "
1 stick Gum	0.14 "	—
	10.77 oz.	1179 calories
C UNIT (*Supper*)		
Biscuit		
(a) Pemmican	2.3 oz.	325 calories
(b) Graham	1.7 "	212 "
Canned Sausage	4.0 "	537 "
"D" Ration	2.0 "	300 "
2 tablets Lemon Powder	0.21 "	—
4 cubes Sugar	0.70 "	80 "
1 stick Gum	0.14 "	—
	11.05 oz.	1454 calories
Total Net Weight of Ration	32.86 oz.	
Total Calories of Ration		3726

Field tests on this ration proved very satisfactory. The soldiers ate all of the ration and stated that they would not mind staying on it another two days. Dr. Keys' report reads, in part, as follows: "On arrival here the men who had been on the experimental rations were neither subjectively nor objectively in the least inferior in condition to those men who had been maintained on the standard garrison rations. The sugar tolerance tests carried out immediately thereafter indicated that, if anything, the men on the parachute rations were in a more satisfactory metabolic state than the men on the garrison rations."

Many question the reason for the gum in the ration. During my service on the Mexican Border with the Cavalry, I noticed that many men would chew gum to keep the mouth moist and "cut the dust". The conditions likely to prevail when this ration is used are a limited water supply, smoking will be forbidden, and the men will be working under a high nervous tension. From my own experience I knew that the chewing of gum will reduce the consumption of water on the march. In addition, the chewing of gum lessens tension. Commercial

airlines issue gum to passengers before landing and airplane pilots for several years have used gum to relieve pressure on eardrums. We believe, therefore, that gum has a definite value in this ration.

The 2-oz. dextrose confection is divided into 15 tablets, one or two of which the soldier will eat and keep the rest for later in the day. We believe that the blood sugar level is maintained more satisfactorily for the soldiers on this ration than for those on Garrison Ration, because of the intake of carbohydrate between meals. This assumption is substantiated by Haggard and Greenberg in the October 1941 issue of the JOURNAL of the American Dietetic Association.

Another development in the past year was the small grill for use by aviators, on northern trails, or by soldiers in general, as it requires but very little space. Mr. Speaker, of the J. W. Speaker Corporation, working with Master Sergeant Henry Ingram of our laboratory, who knew that any grill taking up too much valuable space would not be approved by the Quartermaster General, has developed a grill which, together with several "Heatabs", can be carried in the watch pocket.

Another serious problem facing the laboratory at all times is that of packaging. The shortage of aluminum and threatened shortage of tin makes the research work all the more important. Ordinary commercial packaging, as a rule, is satisfactory for garrison use. However, food to be used by the troops when they go on maneuvers, or a product to be stored for an emergency, must have special packaging. When in the field, supplies are often stored in the open and exposed to the sun, wind, dust and rain, or they may be covered with a tarpaulin if one is available. Food to be stored for emergency use may be sent to the tropics, which requires that it be packaged to withstand high temperatures and high humidity as well as insects, or if to Alaska or Greenland, the processing and packaging must be suitable for extremely low temperatures.

Many materials tested are found to be suitable for the tropics, but become brittle and break at $-25°$ F. On the other hand, materials that withstand the low temperatures will deteriorate in the tropics. A combination of the two essential characteristics has resulted in a satisfactory package for some products.

In addition to climatic conditions, we must have material that is moisture-proof, grease-proof, and gas-proof. Fifteen materials were tested for grease and moisture resistance in our laboratory. The identical materials were then sent to the Chemical Warfare Service for a gas-proof test. We found three materials with excellent ratings for moisture- and grease-proofness. But when the report was returned from the Chemical Warfare Service, these three materials were rated as poor for gas-proofness. Now we are attempting to combine the qualities of the best material for protection against gas with those of the material which has both moisture- and grease-proofness.

Our laboratory reports are submitted to the Chief of the Subsistence Branch of The Quartermaster General's Office, who ties them in where he sees fit. It is gratifying to us that the majority of our findings and recommendations are accepted. As you well know, research is usually a long-drawn-out affair. The development of the Special Field Ration covered one and one-half year's work so far and there is still room for improvement. Many of your members have visited our laboratory. I wish more of you would visit us when in Chicago. I wish also to take this opportunity to thank you for the cooperation you have given us and the splendid work many of your members have done to convince the public that the men are well cared for in the Army.

Planning Diets According to the New Nutrition Yardstick

"Planning Diets by the New Yardstick of Good Nutrition" is the title of a publication released by the Bureau of Home Economics, U. S. Department of Agriculture. The diets included come under the heads of low-cost, moderate-cost and liberal. The quantities stated in the diet plans represent those which should reach the kitchen, and are exclusive of the waste or losses in harvesting, storage, or processing of food products. Care must be taken in the home to conserve the nutritive values of all food products through proper storage, preparation, and meal service. This publication is intended for nutrition specialists, teachers, social workers, public health officers, nutrition committees, land-use committees, or administrators concerned with problems of food purchases or food production for families, a community, or the nation. This edition presents only selected tables and but little of the text and explanatory material planned for later printed bulletins. The latter will include a revised edition of "Diets to Fit the Family Income," U. S. Department of Agriculture Farmers' Bulletin No. 1757, and also a handbook for the more technically trained worker.

Editorial

FOOD AND MAN-POWER

A writer has recently said: we have been engrossed so long in perfecting machines that we have forgotten the "nameless and indispensable force behind them—man."[1] Great funds have been expended on studies of the fuels and metals of the earth, in combating the senseless waste and erosion of the land, in conserving the waters as they flow from the hills to the valleys below, in transforming natural forces into the electrical power to operate man-made devices. But all the while as a nation we have been curiously unconcerned about human power. "Through a strange inversion of logic that in a nation's ledger of assets puts humans last," we have studied the nutritional needs of our domestic animals, we have replanted our forests and dust bowls, we have built dams and irrigation ditches, but only very recently have we begun to be aware that there is such a thing, too, as human erosion.

We took that human being for granted, we exploited him as we did our lands and forests and we gave little more thought to human nutritional needs than we did to the replenishment of our lands and forests. We worked on the old theory, that what was good enough for grandfather was good enough for us, forgetting that the soil and the foods, in grandfather's day, were as Nature made them.

Sadly enough, not until war threatened a rich and wasteful land did the nutrition of man become a matter of national policy. For even in this mechanistic age wars cannot be waged without men, and the men must be physically fit. How many of the men of draft age were found to be physically fit—and what proportion of their physical disabilities could be fairly related to nutritional deficiencies, are questions which have been answered elsewhere or are open to debate.[2] The mere fact that so many in the prime of life were physically unfit should provoke an open-minded attitude as to the probable causes.

An open-minded attitude is not evidenced, however, by such comments as those which have been recently noted.[3] There can be nutritional deficiencies other than those associated with vitamins; studies of the actual food consumption of thousands of American families in recent years have shown that deficiency of calcium is very common, and the term "subclinical", if it be closely analyzed, could merely serve to cloak the discrepancies in the diagnostic modus operandi. No longer should a subject or a patient be dismissed with the time-worn phrase—"there is nothing physically the matter with you"—until all the light afforded by modern means of diagnosis of nutritional deficiencies such as those recently reported[4] is thrown upon the case in question. The preliminary manifestations of pellagra sine pellagra, or the latent manifestations of polyneuritis sine polyneuritis (as in pregnancy, for example), are a part of such recent accessions to diagnostic knowledge that such statements[3] as: "I have been looking for ten years for a case of polyneuritis complicating pregnancy and have yet to find it". . . . "From 1929 to 1939 there were 16,649 deliveries with no case of polyneuritis" . . . "he had seen two cases of polyneuritis in the last two years in about 9,000 cases of pregnancy" . . . "he could remember only one case of polyneuritis in an experience of over 20,000 obstetric cases" . . . "[he] has seen two cases of polyneuritis in a consultation practice of 2,500 cases," can be taken with a very large grain of salt, indeed. It should be remembered here that the polyneuritis of pregnancy is a comparatively recent concept. How many sub-critical evidences of nutritional deficiencies have remained undetected because, if you will, physicians do not "possess the rather special training necessary to recognize the widespread prevalence of submarginal degrees of deficiency disease"[3] is a poser that should hold the attention of the intelligently progressive clinician even though it may bitingly be suggested that it would be "clear to a government doctor."

A major premise should not always be taken as the correct answer. As a later commentator[5] has

[1] Fortune, August, 1941.
[2] Am. J. Pub. Health, 31: 969, 1941.
[3] Correspondence, J. A. M. A. 117: 1035, Sept. 20, 1941.
[4] Milbank Mem. Fund Quart. July, 1941. Am. J. Pub. Health, 31: 1063, 1068, 1079, 1941.
[5] Correspondence, J. A. M. A. 117: 1283, Oct. 11, 1941.

well said, "the human body can stand a lot." Vitamin deficiencies, viewed experimentally, may take from three to six months to manifest themselves even under laboratory, to say nothing of clinical observation. Marginal states of nutrition, it is true, may be maintained in man for fairly long periods until the advent of illness or some extreme stress or strain brings them to light. Judged by widely accepted standards of nutritional adequacy and careful surveys of dietary intakes among cross sections of our population, it is conservative to say that many millions, even 45 million of our people do lack or ignorantly fail to avail themselves of foods which we know are essential to health.

Neither an ostrich-like disregard of the results of carefully planned studies that have clearly demonstrated the widespread incidence of nutritional deficiencies, nor the snap judgment of those whose views are colored by hit and miss observations are compatible with scientific progress. Scientific and medical progress through the centuries has at times been chilled by the doubting Thomases on the sidelines, those on the fringe of action; but only those smugly content with the status quo are stayed by such doubtings. Sir John Boyd Orr has recently said[6]: "There is no longer any doubt that faulty diet is the cause of deficiency diseases in human populations, and of much ill health not sufficiently severe to be classed as disease." He continues:

> There is urgent need for more co-operative research between the physiologist, the clinician and the psychiatrist on these effects of faulty diet. Clinical research has failed to keep pace with the brilliant work of the biochemists in the isolation and synthesis of vitamins and of the physiologists and pathologists in determining the effects of deficiency on experimental animals. But even with the meagre information which we have, one might predict that the application of the science of nutrition to the raising of resistance to infectious diseases, to the prevention of certain chronic diseases and to the promotion of psychological wellbeing may be even more important for human welfare than the cure of the deficiency diseases already developed.

[6] Nutrition Abstr. & Rev. 11: 3, July, 1941.

BUILDING MAN-POWER IN NAZI GERMANY

One's first reaction to the glowing descriptions of the physique of the German soldiers is that of incredulity mixed with a sense of resentment at the implied comparison. But on the heels of this reaction comes the full realization that something rather extraordinary has been achieved in Nazi Germany in the building up of its man-power. How has this been accomplished?

An article in the September issue of the *Bulletin of Hygiene*[1] entitled "Summary of Certain Public Health Measures Adopted in Germany During the War," is highly illuminating. It is evident that, with characteristic thoroughness, Nazi Germany through its Public Health Department has applied the science of nutrition in the feeding of its youth. That the people may have all the necessary nutritional elements, the Minister of Food has persistently sponsored and encouraged the development of substitute foods from all possible sources.

"By a series of decrees intended 'to ensure the vital necessities of the German people' (29th August, 1939), the rationing of a series of foods was introduced and the maximum quantities to be distributed were fixed. These foods are given only on presentation of cards of various colours which carry the holder's name; the cards are obtained from the Food Offices and are valid throughout the whole Reich. Hospitals, institutions, hotels, restaurants, prisons, ships and groups of citizens living in common can obtain a global amount covering their needs for a fortnight." Special supplements of milk, farinaceous foods, eggs, butter, cheese, and meat are allowed for sick persons, and for expectant mothers and blood donors; while vegetarians and persons over 70 may exchange their meat cards for other foods. Tables giving the exact allowances for persons in hospitals and for those with various diseases are included in the article; also a table showing the distribution of rationed foodstuffs to persons in various age and labor classifications.

But it is the unrationed, substitute foods which are especially interesting. "In popular publications on nutrition, emphasis is laid on the greatest possible utilization of foodstuffs; war is declared on waste; measures for reclaiming waste products are detailed, but above all the housewife is urged to learn to make simple, cheap but nourishing dishes, and many recipes are suggested. Instructions are given, for example, on how to extract from whey an albumin which, when seasoned, can be spread on bread, and wholemeal bread containing the husk of the cereal is recommended." Animal blood is used extensively, the plasma from horse blood having recently been added to the approved list which included bovines, pigs, sheep and goats. After treatment with "Fibrisol" following the "Lux" process, the blood remains liquid for a fortnight, while keeping its plasma and fibrin; in this form it is used in the preparation of sausages. By centrifuging, 30 per cent of the plasma is extracted and the corpuscles serve to make black pudding either alone or with the addition of one-third blood. The plasma, it is said, may be added to sausages without effect on the taste. The plasma may also be dried and used, after redissolving, to replace eggs in pastry and noodles. "Milei" made of lactalbumin, or "Viking Eiweiss" extracted from the flesh of non-fatty fishes, may be used for the same purpose.

Great use also is made of bones. "The fresh bones

[1] Bureau of Hygiene & Tropical Diseases, London, W.C.1.

are either autoclaved, to extract the edible fat, or boiled in contact with the air, to extract the gelatin. By using Schönberg's process both fat and gelatin can be obtained. Experience has shown that by adding a small proportion of albumin to the gelatin a high degree of nutritive value is given to the latter. In addition, by grinding the fresh bones in a special mill and adding 30 per cent of water, a paste is obtained which can be spread on bread." (No mention is made as to what, if anything, is added to these new foods to make them palatable.)

A new process for the preservation of potatoes consists of drying them in strips. It is stated that the Army uses these in large quantities. A mixture of flour and milk albumin or soy beans is called "German rice" and the "ersatz" coffee now has a basis of barley. One factory perfected a process for preserving the flesh of whales, to be eaten fresh or canned. "The German people are said much to appreciate the taste of this food, of which 1 kg. provides 1360 calories. Pastes made of whole fishes (except the intestine) of various kinds are prepared and provide very economical sources of protein, fat and vitamins."

Active propaganda is carried on for the cultivation of oil-producing plants, including colza, rape, sunflowers, poppies and flax. It has been estimated that a field used as cattle pasture produces only 90 kg. butter or 150 kg. lard a year as against 800 litres oil when planted with colza. The soy bean and the lupin have been given particular attention. Soy flour is distributed to the Army kitchens. A table showing proportion of the diet furnished by unrationed foodstuffs indicates that almost half of the caloric consumption is from the latter group.

Some interesting specific regulations are those covering preparation of canned foods to preserve vitamins, the free distribution of synthetic vitamin D and ascorbic acid to children, preparation of non-alcoholic drinks from various herbs and products hitherto unused, limitation of the distribution of tobacco and alcoholic drinks, etc.

Since 1939 even medicaments have been carefully rationed in Germany, but the health of infants and children has been carefully supervised. Regular medical examinations are required of school children, and rigorous training is necessary for the profession of "children's nurse." According to the *Bulletin of Hygiene*, "These new regulations devoting particular care to children have been introduced with the special object of preventing the present war from having the serious repercussions on the future of the nation that were caused by the last war."

"HOT SCHOOL LUNCH? IT'S NO PROBLEM!"

The story of how a rural community in South Dakota managed its hot school lunch problem with apparent ease and a great deal of success has been interestingly told by Miriam Williams in the *Farm Journal and Farmer's Wife*, of which she is assistant editor. One of those who took the initiative in this school lunch program and subsequently other similar programs throughout the state of South Dakota is described by Miss Williams as an attractive, capable farm woman, mother of five children, and state officer in the very active State Federation of Home Demonstration Clubs. While attending the National Nutrition Conference in Washington she revealed to Miss Williams what she and other farm women like herself, who had studied nutrition in extension courses, were doing to apply their knowledge to the school lunch problem.

Some of the highlights of the plan adopted in the rural community mentioned above are: Each child brings from home a plate, cup, saucer and sauce dish to use at school. Other equipment is furnished by the school and the P.T.A. A supply of free surplus foods is allotted to the school by the Surplus Marketing Administration every two weeks. This food is stored in the school-house, and a school fund buys additional supplies each day. Each mother contributes a small sum a week to hire someone to prepare the food. This was resorted to after a plan for having mothers prepare the food at home and at school had proved inefficient. A committee in the P.T.A. plans menus and helps check supplies and equipment and sees that a high standard of food preparation and sanitation is maintained. Variety in sandwich fillings, different kinds of bread, assorted fruit juices, and varied flavors for milk shakes provide the surprise element which the directors of the project claim gives the children zest for eating. One hot dish each day helps to make the luncheon meal an occasion and lessens the tendency to gulp and run.

In some of the schools in South Dakota each pupil brings a jar of cooked food for himself, to be heated in a covered kettle. In others, the pupils take turns bringing a hot dish for the whole school, in which case the contents have been decided upon beforehand, and each pupil brings supplementary foods in his lunch box. In schools where this plan is used or where certain foods are supplied by the Surplus Marketing Administration, menus are posted a week in advance and suggestions are given to the children as to what they might bring to make the meals complete.

Several luncheon plans, as suggested by women who worked on the hot lunch programs just described, have been compiled in a leaflet entitled "Hot School Lunches." This includes menus and recipes for serving 25 persons and is available to

groups in other states through the *Farm Journal and Farmer's Wife*, Philadelphia. Miss Williams acknowledges the assistance of members of the American Dietetic Association who were responsible for the development of a majority of the recipes incorporated in the booklet.

ADDRESS OF WELCOME[1]

JOSEPH C. PEDEN, M.D.

The St. Louis Medical Society cordially welcomes the American Dietetic Association to this city. I consider it a privilege to address such a distinguished group, a group that can boast of very notable accomplishments in the dietary management of disease, in the dissemination of literature calculated to give a correct understanding of dietary problems, and in the building up of those aesthetic concepts the application of which can add immeasurably to the patient's enjoyment of his food.

In the past twenty-five years, there has been what might be called an evolution of dietetics. Previous to that time, although there were undoubtedly splendid efforts made in various institutions, there was a palpable lack of concerted action in this particular field. A guiding and stimulating force was urgently needed. Integration of scattered units and concentration of attention on vital problems called for organization and cooperation. The formation of the American Dietetic Association answered the need and gave impetus and direction to the individual efforts that were being made. By realizing the immediate aims and long range objectives of the Association, the work of its members was, as it were, invigorated and lifted to new heights of efficiency and usefulness.

Of paramount importance in bringing about the very striking results achieved in the field of dietetics is the official organ of your Association: namely, the JOURNAL of the American Dietetic Association. From its inception this publication has maintained a high literary standard. The various articles appearing in it aim to make the readers cognizant and appreciative of new developments in the science of dietetics. Down through the years it has consistently endeavored to give the best to the members of the Association, and especially in the formative years, when dietetics was in the evolutionary stage, the material presented in the JOURNAL played a highly important part. Experiments dealing with dietary problems and successfully carried out in some particular institution were vividly described. Since we are all imitators, it is only logical to conclude that these experiments were incorporated into the dietary régimes of other institutions. In this way a generalized upward trend was gradually brought about. By arousing a deep enthusiasm, the JOURNAL imbued the members with a desire to do some personal research on that particular phase of dietetics presented to them. In consequence of such efforts, a vast body of knowledge pertaining to this science was accumulated. The editors have frequently published the results of studies in nutrition, pertinent facts about the vitamin content of various foods, and interesting and valuable material that has inevitably stimulated and motivated much excellent endeavor in this particular field.

All the development that has taken place in dietetics converges to one central point: the very important position occupied by the dietitian and the dietary department in the modern hospital. Even a casual observation of the functioning of one of these institutions makes it evident that the dietitian and her activities are simply indispensable to the set-up. But it is especially in the domain of diet therapy that the physician receives such fine assistance because of the knowledge and skill of the dietitian. We all know the importance of diet in diabetes, pernicious anemia, renal disorders and gastric ulcer. When these conditions exist, the progress of the patient depends to a considerable extent upon a correct diet. For this, the doctor depends on the dietitian. Furthermore, he depends on her to give to the patient who is leaving the hospital, or to his family, those instructions which will make it possible for the patient to continue the diet prescription at home.

In recent years the dietary factor has been recognized as having a bearing on many pathological conditions. Especially noteworthy are the vitamin deficiencies resulting in such diseases as rickets and scurvy, pellagra, beriberi, and nervous, gastro-intestinal and skin disorders. In fact, the dietary factor is becoming increasingly important, not only in the study of disease but in the investigation of conditions not readily associated with improper food habits. Dr. Russell M. Wilder, chairman of the Committee on Food and Nutrition, National Research Council, in the current issue of the *Scientific Monthly*, states that he believes that the low content

[1] *Editor's Note:* This address of Dr. Peden, as President of the St. Louis Medical Society, at the Welcoming Luncheon of the American Dietetic Association, St. Louis, October 19, is published in the JOURNAL as evidence of the gracious and generous attitude of the physician toward an auxiliary profession. The JOURNAL editor, while a bit dubious that our publication merits such commendation, must admit that kind words lend courage and praise provokes greater effort to live up to the demands of the new JOURNAL this year.

of thiamin in the diets of urban workers and some employers might contribute importantly to the problem of industrial unrest and offers results of experiments to support his statement.

The medical profession owes much to the science of dietetics. To you who make the concrete applications of this science, it is especially indebted. This convention will undoubtedly inject a new enthusiasm into the work of the individual members, a deeper realization of your aims and objectives, and an awareness of the problems confronting the Association in this present emergency. Progress is your watchword!

ARMY FOOD AND THE FUTURE[1]

COLONEL R. A. OSMUN

About a year ago the War Department sent several of us to England as military observers. In four months there I lived through some of the most trying periods England has experienced. Explosive and incendiary bombs rained on London and other big cities every night and often during the daylight hours. Food supply ships in the Atlantic and unloading docks in the British Isles, too, were under fire. The actual shortage of food was aggravated by transportation difficulties in England itself so that maldistribution of available food was an added problem.

Before leaving America I had had all the butter, milk, meat, vegetables, and everything else I needed. In fact, I never paid much attention to food for I knew I could get what I wanted and so I ate what I liked. When we arrived in England, I found that I could not get the food I wanted. Even in the best hotels the portions were small, the variety very limited and second portions not allowed. The piece of butter served with each meal (only at the largest hotels) could be put on my thumb-nail and was less than one-fourth of an inch thick. Over here, I had never eaten string beans. In England I had to eat them. There were several other foods, too, that I had to learn to eat. After a while I found that when I ate the food that was placed before me and worked harder than ever before in my life, I began to look better and feel better than I had in many years. As a result, I became more interested in the scientific aspects of diet which the British, likewise, had been forced to do.

Here there is no general necessity for the mechanical addition of vitamins or other elements to our daily diet. We can get these essentials in natural foods; because of the wartime blockade the British cannot. A British friend of mine recently received a letter from his wife in England. According to this, a civilian at present is allowed the following for one week: ¼ lb. meat; 2 oz. cheese (if he can get it!); 2 oz. butter; 4 oz. margarin; 2 oz. lard; 1 oz. tea; ¼ lb. sugar; 2 oz. jam; ¼ lb. bacon; 1 egg per week; ¼ can of milk per week—which means one can a month. Bread, however, is not rationed. Seldom do the English see any oranges, and the only fresh fruit available is the meager amount grown within the country. You can see why the British must fortify their otherwise inadequate rations with synthetic vitamins. The British Army scale is a little higher, and the men in the service cannot be said to lack nutritionally adequate rations. This may be due partly to the fact that there is little if any wastage. About two years ago the British Army Catering Corps was formed to improve the preparation and serving of meals and to combat waste, and it has done a fine job.

When you compare what the English civilians and soldiers now eat with the food that civilians and men in the United States Army are getting, you will see how lucky we are. Of course what the British are learning is being forced upon them by the ever-present shadow of scarcity. We are bringing about improved diets through planning and research; and because of the research and planning by the Quartermaster Corps the United States Army is participating in one of the greatest experiences of our generation—the correct feeding of 1,500,000 men. In my opinion, this experience in correct eating on such a grand scale will have a definite effect on national eating habits and national economy after the war. Our own civilian population is not affected by any major changes of food habits as yet, but 1,500,000 young men in the Army are now learning something about correct food values which they probably never knew before. Many others who will be called into training in the future will add to the continuously increasing group of trained, fit young men returned to civil life with a clear idea of what is good to eat.

When I was in the South recently, a merchant complained to me shortsightedly that we are "teaching the boys luxurious habits." For instance, we are teaching them to drink milk, something they probably hadn't tasted since they shifted from the baby bottle. The merchant told me that "When they come home there will be no milk to drink. We don't have many cows and what we do have aren't very good." Others wanted to eat certain "home" foods three times a day when they first came to training camp. They didn't want any "fancy" food; that is, they didn't want it at first. But you ought to see them pack away the fruits and vegetables and apple pie and ice cream now! Of course the answer to the merchant's argument against teaching

[1] Abstract of an address presented at the Exhibitors' Dinner, American Dietetic Association, St. Louis, October 21, 1941. Colonel Osmun is Chief of the Public Relations Branch, Office of the Quartermaster General, Washington. He is a graduate of the U. S. Naval Academy, the Army Industrial College and the Army War College.

the men to drink milk is that when they come home they will demand milk, and some enterprising young man will develop a dairy herd to supply that demand. Others will take note and a small dairy industry will spring up where nothing but cotton and tobacco were raised before. That is only one phase of the change in civilian eating habits which I believe will result from the excellent, well-balanced meals which the Quartermaster Corps is feeding the young men in the Army today.

Thus the first effect of Army feeding may be felt among the farmers. The farmer who planted only wheat, corn, or cotton before, in other words, the one-crop farmer, will see if he is wise that there is no profit in raising a single crop of which there is already a surplus. Thus demand will diversify the entire farming effort—something which should have been done a long time ago, according to Secretary of Agriculture Wickard. The present Army feeding plan will do its part to develop this healthy trend.

We are trying to feed the men more fresh fruits and vegetables. There is an actual shortage of these items in some sections of the country and the price in such cases is almost out of reach. When they leave the Army they will demand fresh fruits and vegetables and intelligent merchants will attempt to supply that demand. That will encourage the planting of vegetables, the setting out of more fruit trees and undoubtedly the further development of farm cooperatives.

What will be the impact of Army feeding on the farm cooperatives and the packing industry? I mentioned that the Army was feeding the men more and more fresh fruits and vegetables. One reason is because the cooperatives and transporting industries are continually devising more effective methods of marketing fresh products thousands of miles away from their place of origin. The packing industry supplements this by devising better methods of packing and quick-freezing. We in the Quartermaster Corps have experts who work exclusively on new and better methods of freezing, shipping and packaging this type of food. I imagine that the locker system now in use in some cities will be used in every small town and hamlet in the not too distant future so that anyone can rent a refrigeration locker and keep meats and vegetables in it until he is ready to use them. Probably low-priced family storage lockers for frozen foods will become a necessity in every home, just as the ice-box is today. Or maybe the ice-box companies will make an inexpensive combination unit generally available, part of which will keep foods cold while the other part will quick-freeze fruits, vegetables, and meats. The possibilities of such a combination seem unlimited. Again, it is demand which will cause this development, and the demand is being created in large part by the good eating habits being taught in the Army.

Closely following the influence on the packing industry, Army feeding has always had an effect upon the grading and standardization of foods, and this is being intensified now. The years 1917 and 1918 really witnessed the inception of activity in this field. The Quartermaster Corps has always bought high class food—in many cases food that would be accepted by commercial inspectors is rejected by quartermaster inspectors. It must be packed correctly, too, in order to conserve vitamins and other food values. The Quartermaster Corps not only inspects the food at the original shipping point, but retains the right to reject it at its destination. The result is that commercial grading and standardization of Army food supplies are being raised continuously to a higher standard, and this, in turn, will have a good effect on the grading and standardization of foods for the civilian population.

What will we be eating day after tomorrow? As scientists, you can foretell that in a more scientific way than I, for that is your business. Basically, while British eating habits are being changed as a result of necessity, ours are being changed as a result of the very scientific research in which some of you and we in the Quartermaster Corps are jointly engaged. Out of these studies are coming a good many discoveries which will affect future food habits. Undoubtedly the Army food of today will have a definite effect upon the civilian food of tomorrow, and in turn on our national economy. Together we will have played a part in building healthier, stronger citizens, and a more diversified and efficient food industry.

THE ARMY DIETITIAN AND HER DUTIES[1]

HELEN C. BURNS

In 1940 there were approximately 55 graduate dietitians assigned to duty with Army hospitals. Today there are about four times that number in general and station hospitals of the United States, Hawaii, Puerto Rico, the Philippine Islands, and Alaska. If we are to meet the present requirements, an additional 200 young women are needed.

Since 1922, when the Army School for Dietitians was founded by Brigadier General James D. Glennan of the Army Medical Center and Walter Reed General Hospital, Army hospitals have staffed their dietetic departments almost exclusively with gradu-

[1] This and the paper following, by Miss Manchester, were presented before the session for Dietitians in Army Service at the St. Louis meeting of the American Dietetic Association. Miss Burns, Chief Dietitian at Walter Reed General Hospital, is a graduate of Simmons College and of the student training course at Walter Reed General Hospital where she has since been on duty.

ates of this school. However, a rapidly expanding Army has so increased the immediate need for large numbers of dietitians that it has become necessary to employ some from civilian institutions. At present, therefore, dietitians are being appointed from the Civil Service list of eligibles and from the American Red Cross enrollment. This means that many dietitians now on duty have had no previous Army experience and are therefore somewhat uncertain regarding the precise duties of the Army dietitian.

Since she serves under the direction of the mess officer, the dietitian is responsible for the patients' food service in its entirety. This includes the following: (1) planning menus for all diets and keeping food costs within the prescribed allowance; (2) supervising the preparation and service of all meals to tray, dining room and cafeteria patients (the preparation and serving of trays in the ward diet kitchens will be done by a dietitian, nurse or person so designated by the commanding officer); (3) inspecting all waste; (4) assisting in the ordering of food supplies and procurement of kitchen equipment; and (5) demonstrating the preparation of special diets to patients when necessary and giving instruction regarding these.

Let us consider these duties individually. Menu planning in the Army, as in any hospital, should always be governed by the nutritional requirements of the patients. The regular diets are, of necessity, heavier than those customarily served in hospitals because the men remain in the hospital during their convalescent period. Food preferences must be given consideration to avoid wasting large quantities of food. It is further essential that the dietitian possess a working knowledge of all equipment and maintain an understanding attitude toward all personnel. Many of the Army cooks are not so highly trained as those in civilian hospitals; menus, therefore, must consist of dishes comparatively simple of preparation. Although the kitchen equipment is generally adequate, in most instances it is not feasible to plan more than one dish requiring a given type of preparation, such as baking, for the same meal. All menus should be sufficiently elastic to include any left-overs, prepared as attractively and palatably as possible. The importance of variety in foods, both with regard to color and consistency, should be remembered. Since the dietitian is informed each month regarding the ration allowance, it is her duty to plan menus which conform to this and which amply allow for special holiday meals.

Even though the dietitian were required to do nothing more than plan menus, she would still be of inestimable value in the administration of the dietary department. However, to ensure the proper and most palatable preparation of foods, it is her duty to supervise the cooking of each meal. Every dietitian, of course, should have a complete set of tested recipes and see that the cooks clearly understand the mechanics of their preparation. A cook usually takes pride in his work and is eager to produce dishes that warrant praise. This attitude should be encouraged by complimenting him on his efforts whenever they deserve commendation.

Careful serving of foods is quite as important as their proper preparation. Nothing is more harmful to kitchen morale than seeing a dish which required hours of preparation served in an unappetizing manner. If there are no dietitians on the wards, sufficient explanation should accompany menus to guide those responsible for serving trays. Together with standard recipes, standardized servings are most important.

Army inspectors are responsible for thorough checking of waste, and routine evidence of quantities of once edible food in garbage cans will reflect directly upon the dietitian. If there are a limited number of dietitians in a large hospital, a report on waste can be requested from the ward diet kitchens, to be turned in with the diet slip each morning. One ward may require larger servings than others, and allowances should be made for these as well as second helpings if an investigation indicates they are really necessary.

Although the dietitian does not do the purchasing, she does do the requisitioning. Therefore it is essential that she know something regarding the purchasing system of the Army. The majority of general and station hospitals are on the Garrison Ration. The money value of the ration is turned over to the dietary department, and with this the necessary foodstuffs are purchased by the mess officer or obtained from the quartermaster. The foods purchased by the quartermaster vary with the respective stations, although, as a general rule, all staples, most canned fruits and vegetables, and carcass meat are obtained from this source. Monthly and quarterly requisitions are sent in, and the dietitian, in order to perform her duties intelligently, must know the items to be ordered on these various requisitions and the specifications for each. She must, furthermore, be able to estimate fairly accurately the quantities needed, by means of skeleton menus or by basing her menus on the requisitions. Regardless of which method she follows, she should keep an estimate of the amounts used, and not make the mistake of putting veal cutlets on the menu when the only remaining veal is the forequarter. As the quartermaster does not know what type of food is desired nor what equipment is used in its preparation, it is essential that the dietitian express her needs most explicitly. She may likewise assist the mess officer by specifying exactly the grade and amount of food and the equipment desired, and accompany this by an explanation of the purpose for which it is to be utilized.

The above pertains to hospitals operating on a Garrison Ration. In hospitals operating on a Field Ration, the dietitian may cooperate most effectively by planning the special menus within the limits of the Field Ration. The dietitian must learn to economize wherever possible, both with regard to the time factor and in the number of different types of food needed. Through thoughtful planning many of the foods prepared in the main kitchen may be utilized in special diets.

The dietitian in the kitchen will compile weekly menus for routine liquid, soft and light diets. Other special diets will need to be prepared as ordered by the ward officers. If there are no dietitians on the wards, the dietitian in the kitchen will compile a menu to be sent to the wards. Sometimes it is necessary to designate the patient for whom the food is intended by attaching a marked slip to the food container. If a dietitian is on the ward, she can construct a menu from the basic diets, with possibly the addition of another vegetable or salad. Although ordinarily the dietitian is not assigned specifically to the wards, it is nevertheless her duty to check on the final service to the patients so that she may know what is transpiring. If a patient on special diet is to be discharged, the ward officer customarily requests the dietitian to give the patient instructions regarding his diet in order that he may follow his prescribed food routine after leaving the hospital. Besides giving this instruction to patients on special diets, the dietitian should frequently take note of the patients in the mess hall and advise them regarding the importance of eating certain types of foods such as salads, fruits, etc.

The Army dietitian must, above all, be a teacher. She has much to offer those with whom she works. She must acclimate herself to the conditions prevailing in this environment, and must assist in every possible way those with whom she is associated professionally. The mess officer on duty in the hospital of a newly created post may not be a specialist in the handling of foods; it is therefore the duty of the dietitian to give him the benefit of her extensive training in this field in order that he, as head of the department, may perform his duties most efficiently. In most instances, the mess sergeant will willingly relinquish the planning of menus, food requisitioning and the like to the dietitian, but before she assumes these responsibilities she must have a thorough knowledge of all the various methods and procedures. The Army has its rules and regulations and the Army dietitian should be familiar with all those which pertain to her work.

THE DIETITIAN IN ARMY SERVICE

KATHERINE MANCHESTER[1]

The dietitian trained in a civilian hospital must learn to adjust herself to the Army hospital. I was trained in a civilian hospital but later I learned something of Army methods on the dietary staff at Walter Reed Hospital. In April 1941 I was assigned to Ft. Leonard Wood, Missouri, at a time when the hospital was still under construction. In fact the kitchen was still incomplete when the hospital opened with 300 patients. Ft. Leonard Wood is 140 miles southeast of St. Louis and now has 30,000 to 40,000 troops and over 200 mess halls. The hospital has a bed capacity of 1500 with expansion plans for 2000. The hospital proper consists of about 150 wooden buildings of the barrack type with connecting and enclosed wooden ramps. We now have about 800 patients.

Problems of the dietitian in one Army hospital may be quite different from those in another, and different methods may be needed to solve them. For instance, a barrack-type mess is likely to be new to most dietitians entering Army service. We have two patients' messes, a detachment mess and one for officers and nurses. In a barrack patient mess we have a dual purpose: the feeding of ambulatory patients in the mess hall and the food cart service from the mess or kitchen to the ward. Our messes are generally well equipped except that we use coal ranges, but we do have electric ovens. We have three large walk-in refrigerators with plenty of space, but the space for storing staples is too small. We do not have any small food containers, so our small servings of food go to the wards in the formerly discarded No. 10 cans. Our food carts are the old metal box Drinkwater type used in the last war.

The dietitian must learn to build her work around the physical set-up and assist the personnel assigned to her to do the same. If a mess officer is untrained in food service methods the dietitian must assist him regarding the details which are pertinent to his responsibilities. The mess sergeant in most cases will have had some training or perhaps cooked for years in hospitals, but he may not have worked previously with a dietitian. Some quite naturally expect to continue with their commonly assigned duties, such as menu making, which may conflict with the duties of the dietitian. The latter, therefore, must learn to adjust her work to that of the mess sergeant.

As our food service at Ft. Leonard Wood needed better standardization, the mess officer and I drew up a plan to define the duties of all persons concerned.

[1] B.S., University of Illinois, 1937; student dietitian, University Hospital, Ann Arbor, 1938–39; now Head Dietitian, Station Hospital, Fort Leonard Wood, Missouri.

The mess officer then discussed the plan very diplomatically with each group and as a result we have received most favorable cooperation. The plan calls for a dietitian and a sergeant in each mess. The dietitian writes menus, gives recipes to the cooks, checks left-overs and food costs, makes menu changes, has charge of special diets, charts food and supervises all food preparation. The mess sergeant keeps a record of personnel, is responsible for cleanliness of the mess and helps the dietitian to make out food orders. The dietitian under this plan does the work for which she is better trained than the mess sergeant, and if she is a diplomat she can advise and help him, but she will not attempt to do his work for him.

The Army dietitian must be able to analyze and understand the motives of the people with whom she is working. She must have sufficient patience to wait for her chance to act, the intelligence to make her decisions carefully, and the strength of character to stick by her decisions.

STATE NUTRITION COMMITTEES[1]

During the last few months several important organizational developments have tied nutrition more closely into the national defense picture. The Nutrition Division is a division of the Office of Defense Health and Welfare Services. Paul V. McNutt is Director, M. L. Wilson, Assistant Director in Charge of Nutrition and Dr. W. H. Sebrell, United States Public Health Service, Deputy Assistant Director of Nutrition. Dr. Helen S. Mitchell is principal Nutritionist. These officers and their staffs are responsible for the planning and coordination of the national nutrition program.

As a part of this planning and coordination, specific projects which are national in scope are worked out in Washington. A number of the large food industries are cooperating with the Nutrition Division by printing or reprinting posters, charts or pamphlets that can be used in educational programs for better nutrition. One publishing company has donated advertising space for publicizing nutrition during the next ten months, the copy for which is being contributed by a large New York advertising agency. A movie is in the making—the contribution of another group. It is anticipated that this type of cooperation will continue to make more illustrative materials available for local use.

The "Listen America" programs, which ran for thirteen weeks in July, August and September, are to be continued. A more suitable time is being arranged for the broadcast, and it is hoped the listening audience will be increased.

[1] A report by Margery Vaughn, Office of Defense Health and Welfare Services, to the American Dietetic Association, St. Louis, October 23, 1941.

Informative material, published by agencies interested in nutrition, is available from the Washington office. The June-July and October 15 issues of *Consumers' Guide* are excellent nutrition numbers. A bibliography to guide local libraries in the choice of popular nutrition material, further details concerning which appeared in this JOURNAL for December (p. 978), is also available.

The monthly News Letter to members of state nutrition committees will continue, and a separate News Letter for local and county chairmen may soon be distributed.

The Nutrition Division of Defense Health and Welfare Services will continue to coordinate the work of public and private agencies interested in nutrition at the federal level, and assist state and local agencies in stimulating and carrying out nutrition programs. The task of state and local nutrition committees is to see that the national nutrition program reaches every man, woman and child in the nation.

There are active State Nutrition Committees in each of the 48 states, the Hawaiian Islands, and Puerto Rico. Membership on these committees is representative of a large variety of approaches to the nutrition problem. The committees have really swung into action in the past six months, and in most of the states regard themselves as a steering and planning group. The responsibilities assumed are: to survey the present work of existing agencies within the state and provide opportunity for each agency to become familiar with the nutrition work of other groups; to analyze the nutritional situation in the state by pooling all available information; to decide upon the most urgent needs within the state; and to recommend practical methods of meeting these needs and reaching all groups of the population.

Where possible, it is recommended that the chairman or some member of the State Nutrition Committee be made a member of the State Defense Council. This has been done in about half the states. It is rather difficult to give a comprehensive summary of state activities. Since it is most practical to adapt the program to local needs, types of projects in the individual states have varied widely.

In 20 of the 48 states, state-wide nutrition conferences have served to present an analysis of the nutritional situation in the state and to suggest to those attending the conferences practical methods of reaching all groups in the community. The program of a state conference which chose as its theme, "Not Only Enough Food, But the Right Kinds of Food," serves as a good example. About eight hundred people attended the one-day session, held primarily to interest lay persons. A welcoming address by the president of the state college was followed by a short discussion by a member of the State Defense Council, representing the governor of the state. An outstanding pediatrician then dis-

cussed "Recognizing Borderline Conditions of Nutrition." Following this the broad subject, "Is There Malnutrition in Our State—What Evidence Have We?" was presented.

Four speakers were allotted six minutes each to give a picture of the nutritional status in the state, from the point of view of the following: "Selective Service Group," "What a Five-Year Study of College Women Has Shown," "What We Know About School Children in a Specific County," and "Attitudes of Young People Toward Nutrition." The subject—"What Is Being Done About It?"—was discussed by representatives of six different agencies within the state concerned with dental health, extension service home production, school lunch, Food Stamp Plan, surplus commodity programs, city nutritionists and Farm Security Program for improving the nutrition of the family.

At a large luncheon meeting, those attending were grouped according to counties. The question, What can you do about it? was answered in the outline of a community program for making effective the nutrition program as presented by the home demonstration leader of the state. Representatives of the individual counties were then asked to select from the group present temporary nutrition chairmen for their counties. In the two weeks following, at least half of the counties in that particular state had appointed permanent chairmen and programs had been started in several of the communities.

"Nutrition months" and "nutrition weeks," and several research projects on nutritional status in cooperation with other groups are means which have been employed to stimulate interest. In one state a large airplane factory agreed to finance and conduct a nutritional status survey of its workers and their families, which includes a group of school children. The same committee which initiated this survey is attempting to establish another in one of the shipbuilding industries. A project for determining the vitamin content of foods grown in the state is also under way.

As the result of increasing interest in the nutrition program several colleges and universities are including a series of nutrition lectures as a part of freshman orientation courses. One college has added a part-time nutrition consultant to assist students with their dietary problems.

Many state dietetic associations have stressed the importance of nutrition in the present emergency in their programs during the year. The National Restaurant Association, too, at its recent meeting encouraged restaurant owners to cooperate with local nutrition committees. One interesting development has been a nutrition flyer prepared by a large cafeteria chain, which, placed on each tray, points out the importance of adequate diet as well as outlining the dietary essentials.

The expansion of the school lunch program is a heartening sign of the increased interest in good nutrition. Community groups, the Surplus Marketing Administration, the NYA, the WPA, teachers and school administrators have coordinated their efforts to provide good free school lunches, all of which has been a tangible means of starting a community nutrition program. Community canning projects have served to utilize local surpluses and to supplement products furnished by the Surplus Marketing Administration. In several instances gardens were planted on the school grounds and cared for by the patrons of schools for both white and negro children throughout the United States.

In 18 states summer schools have offered special refresher courses to people trained in home economics and nutrition who have not been active in the field recently, and other refresher courses were planned for home-makers who had had some scientific training.

About half of the states now have nutrition programs organized on a local or county level. County committees with the guidance of the state committee are planning their own action programs to meet individual needs. Wherever possible, it is recommended that county nutrition committees have some representation on local or county defense councils.

In several counties a speakers' bureau makes it possible for every club group—homemakers, church, or P.T.A.—to have at least one meeting a year devoted to nutrition. The clubs are welcoming this opportunity, but in some of the more remote communities technically trained people are not available as speakers.

Many county committees find that tradespeople will provide window space for nutrition exhibits. In small communities, nutrition posters are displayed in post offices and railroad stations. Local radio stations are offering five or ten minutes a week so that committees may keep the subject of good nutrition before the people. Libraries are reserving one shelf for nutrition books, pamphlets and leaflets, and the importance of good nutrition is being emphasized by posters prominently displayed on library bulletin boards. In some communities service groups have donated small sums to purchase standard nutrition textbooks for public libraries.

One of several regional meetings at which representatives of four or five counties discuss their common nutrition problems was held in South Carolina for a group of 102 negro preachers. The group was served lunches, using surplus commodities then available, and discussed means of improving the food habits of the negro population of the South. One minister on his return attached a small hand-mill to his pulpit and ground whole wheat flour and spoke

regarding the benefits of whole grain cereal as he preached his weekly sermon.

Most of the county groups have made some sort of preliminary survey regarding the needs of their communities. In one state, a questionnaire sent to about 1600 farm and 300 village families revealed that the women felt they needed to know more about the proper preparation and wise buying of food; they also believed that they did not actually produce at home enough of the foods their families needed for good nutrition. A fair sample of a day's menu for a family (not in the very low income class) consisted of: breakfast—toast and coffee; lunch—pancakes, bacon, cookies, tea and milk; supper—potato salad, macaroni and cheese, bread and butter. In the same state a survey of 250 women, regarding their knowledge of "enriched" bread and flour, indicated that only 91 had heard of these, but after their attention was called to it, 222 found that they were actually using "enriched" flour and buying "enriched" bread in their local stores. These instances illustrate the need for making some type of simple survey which will point up specific needs in the individual county.

A consultant service in nutrition at county fairs has been sponsored by some county committees. Another most important activity of state and local groups is the training of nutrition volunteers. These are a few examples of the many worthwhile projects which are being carried on throughout the forty-eight states.

Hospitals and the Luftwaffe

Eight hundred years ago an old lady grew rich on the profits of the ferry that she owned and ran across the river Thames. With her profits she founded a convent, later to become a priory and finally the hospital we know today as the Royal Hospital of St. Thomas.

This great hospital and its predecessors have survived many assaults. The convent was destroyed by fire in 1207, to be re-erected by the Bishop of Winchester in 1228 and dedicated to St. Thomas à Becket. In 1538 it was suppressed by King Henry VIII, only to be refounded as a hospital for the nursing of disabled soldiers. Finally, in 1553, it found security under the strong protecting arms of the Corporation of the City of London.

At least it was secure for nearly four hundred years. Today it stands on the east bank of the river Thames, immediately opposite the Houses of Parliament. Its shape is that of an eight pronged comb with its prongs pointing to the river. Covering a quarter of a mile of riverside ground it is a target too good to be missed by the Luftwaffe.

The dramatic story of its latest assault is told in the hospital diary for the latter months of 1940, just published in the 1941 Year Book of British Hospitals. . . . Last night a large bomb struck the north side of the hospital in the center, killing two nurses and four masseuses. They were crushed. No patients were hurt. . . . Seventy-six patients who were sufficiently fit were sent to their homes. The remainder were moved to the basement. During the same night other bombs fell near the hospital.—*Hill, C., The diary of a bombed hospital, Hospitals, November, 1941.*

Book Reviews

The Art and Science of Nutrition. By Estelle E. Hawley, Ph.D., and Grace Carden, B.S. St. Louis: The C. V. Mosby Company, 1941. Cloth. Illustrated. Pp. 619. Price $3.50.

Dr. Hawley and Miss Carden have written an intensely interesting book on the fundamentals of nutrition and diet adjustment which should serve to attract and hold the interest of the nurse for whom it is chiefly written. The text is graphic, direct, and well illustrated in black and white and color. The illustrations in the chapters depicting nutritional deficiency states should serve to keep the nurse alert and fully aware of the import of good nutrition. Others, in color, show the reactions for the Benedict test and that for ketosis.

Equally noteworthy are chapters on the historical phases of nutrition, on vitamins and vitamin deficiencies, and those which detail the essentials of dietary adequacy for the individual, the family, and for weight control, and directions for evaluating nutritional status.

Part IV, which presents a plan of teaching based on officially accepted outlines, includes also the practical details of floor plans and equipment for the nutrition laboratory, details of the various duties of laboratory workers and outlines of lessons.

Part V lists additional reading references under appropriate subheads; Part VI, the appendix, includes helpful tables on digestion, metabolism, classification of foods, vitamins (those known to exist, those postulated but not chemically identified and those postulated but not assigned letters), tables of the distribution of vitamins and certain minerals in common foods, a summary of adjustments of the normal diet to meet therapeutic needs, and excellent tabular summations of food values.

The American Illustrated Medical Dictionary. By W. A. Newman Dorland, A.M., M.D., F.A.C.S., with the collaboration of E. C. L. Miller, M.D. Nineteenth edition, revised and enlarged, with 914 illustrations, including 269 portraits. Philadelphia: W. B. Saunders Company, 1941. Leather. Pp. 1647. Price, plain, $7, thumb-indexed, $7.50.

In view of the constantly expanding terminology as a result of research and clinical investigation and practice, an authoritative, up-to-date medical dictionary is most essential. No teacher, writer, or student concerned with the science of nutrition and its application, should fail to have this current edition of a widely accepted medical dictionary within arm's reach. No practicing dietitian or nutritionist can keep intelligently abreast of the times without this wealth of authentic and clear-cut definitions readily available.

Since the appearance of the 1938 edition, 2000 words have been added to the lists of medical and related scientific terms, with biochemistry third among the eight departments which have made notable contributions. Pronunciation, too, which bewilders many, and the derivation of terms are carefully indicated.

Students and practitioners concerned with dietetics and nutrition will find many of the tabular groupings of large numbers of correlated facts exceedingly helpful. For instance, under "acid" will be found a brief description and the chemical formula of most of those identified in nutritional science; in some instances the more important properties or sources of an acid are included.

The dietitian who assists the physician will find the table of diseases richly informative. A number of other tabular compilations: namely, formulas, indexes, laws, methods, reactions, reagents, solutions, systems, tests, theories, methods of treatment, and even that on weights and measures, among others, offer a rapid and ready means of tracking down facts, a task which might be annoyingly time-consuming when pursued in the average reference or textbook.

Thumb-indexed, highly legible and attractively bound, this book might be said to contain more information per dollar of cost and per pound of weight than any other on the market.

Nutrition in Health and Disease. By Lenna F. Cooper, B.S., M.A., Edith M. Barber, B.S., M.S., and Helen S. Mitchell, B.A.,Ph.D. Philadelphia: J. B. Lippincott Company, 1941. Eighth edition, revised and reset. Cloth. Illustrated. Pp. 709. Price $3.50.

This eighth edition of a widely known and accepted textbook is welcome, indeed. Its three distinguished authors have continued to maintain a progressive and open attitude toward the expanding and newer knowledge of nutrition. In the current edition, the section on normal nutrition emphasizes the food requirements of the family and other groups, as well as the individual. That on vitamins, as might be expected, has been entirely rewritten.

New features include a chapter concerning the Recommended Daily Allowances for Specific Nutrients released by the National Research Council, revisions in the chapter on Hygiene of Food Selection and Care, addition of new dietary procedures in Diet in Disease and complete revision of the Food Tables. Very careful and skilled attention has been given to the revisions in Part Four, Food Selection and Cookery. The form and arrangement of the recipes have been changed to afford greater legibility and ease of preparation.

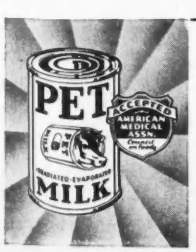
One of the reasons for the success of this textbook may be found in a statement of the authors in the preface: "Every effort has been made to revise the edition to conform to the newest findings in the field of nutrition and diet therapy, and at the same time to be conservative in judgment." Certainly only time-tested and well-substantiated theories belong in books of this type and *Nutrition in Health and Disease* lives up to this high standard.

The 64 milk-rich recipes in this new book can be of great help in following the recommendations of nutrition authorities who are endeavoring to improve the physical condition of American men, women and children

Every one of the dishes made from these recipes is tempting to look at and delicious to eat, yet easy to prepare.

By using Irradiated Pet Milk it is possible easily to include an extra amount of pure, safe, whole milk plus extra vitamin D in delicious food and, at the same time, save money.

Because Pet Milk is more than twice as rich as ordinary milk, it can be diluted with broths, liquids off vegetables and fruit juices to add flavor and valuable minerals and vitamins which would otherwise be wasted—it can be used in place of cream —it will replace eggs and butter—all at a saving in expense due to the fact that Pet Milk costs less generally than ordinary milk, less than one-third as much as cream.



Home Economics Department, **PET MILK COMPANY, 1450a Arcade Building, St. Louis, Mo.**

Please send me, free of charge, **"More Wholesome Food at Lower Cost for 2 and 4 and 6"**

I teach (*subjects*)_____ **in** _____ **school** (*grade*)

*Name*_____ *Address*_____

*City*_____ *State*_____

(*Fill in completely. Offer limited to residents of Continental U. S.*)

A properly balanced feed ration helps her to "do her best" for the National Defense Program.

America's IN ACTION ON

How thousands of individuals are working together to supply the cheese needed by our nation and its friends.

THE GOVERNMENT, through various of its departments, has indicated that dairy products, especially cheese, are most vital in the present national emergency. Cheese was particularly designated because it is a concentrated form of important milk nutrients.

Not long ago the Secretary of Agriculture asked for a tremendous increase in cheese production—called for long range plans to make many million more pounds of this food, both for our citizens and for our allies abroad.

The dairy industry quickly swung into action. How well is indicated by U. S. Department of Agriculture statistics and estimates. At the end of November, the Department estimates 1941 production at probably more than 100,000,000 pounds over 1940, if the then current accelerated production levels were maintained for the year.

Yes, dairy farmers and cheese producers have been moving fast and working hard to supply this defense need on the "Food Front." But as the Secretary himself said: "You can't work the old cow three shifts a day." Naturally many people have been wondering just how these large increases are being accomplished at the present time.

"Intensive dairying" steps-up milk supply

In this country there are about 25,000,000 dairy cows. Today it is vitally important that every herd, every single cow, in fact, produces to its maximum capacity. That is why field men, experts in dairying, are redoubling their efforts to help farmers produce the largest volume of milk possible with *existing* resources.

Some of these field men represent national, state or county organizations, some of them are representatives of cheese producers. But in every case their job is essentially the same:

A comprehensive program

The details of this program are highly involved, of course, but students and teachers of home economics no doubt will want a general idea of how America is protecting and increasing its milk resources.

Scientific, diversified feeding of dairy cattle is the first step. You know how important proper diet is to human life; it is just as important to cows, and directly affects the milk-giving capacity of herds.

America cannot afford to waste a pint of milk through improper handling. Scientific care on farms protects America's milk supply.

To increase milk volume through proper feeding and "weeding" of herds. To *protect* milk at its source by scientific methods on the farm. To build a firm foundation for still further increases by proper breeding.

"Weeding" is the term dairy men use when a herd is tested to see if there are laggards in it—cows not keeping up to a reasonable standard of milk production. America cannot waste feed on such animals, and for economic maintenance of a herd

Cheese Industry "THE FOOD FRONT"

Every drop of milk that comes into a cheese factory, every man-hour of labor must be utilized to produce wholesome, well-cured cheese. Dairy experts help cheese makers to solve problems.

such cows must be "weeded out."

Today, also, attention is turned to scientific breeding as never before. With famous herds destroyed in many other countries, America has become the Dairy Citadel of the world. Scientific breeding is not only important today, as a measure of increasing milk production, but also to prepare for a tomorrow when American herds must form the basis for rehabilitation of dairying in other lands.

Protection of milk vitally important

It takes high-quality milk to make high-quality cheese. For years Kraft field men, national, state and local agencies as well, have been helping farmers to protect fresh milk by the most sanitary and practical methods. The scientific care of milking machines . . . of milk cans . . . the proper cooling of milk . . . "little things" like these are a vital part of the program.

Co-operation by producers

Other dairy food producers, too, are co-operating to increase America's *facilities* for cheese making. In many cases, plants which formerly made other dairy foods, are diverting their production to cheese.

Every drop of milk, every man-hour of labor in a cheese factory must be utilized to produce wholesome, properly cured cheese that can be shipped, stored, offered to consumers, or diverted to any use the National Defense Program may demand.

Housewives eager for information

The government's appeal to dairymen and cheese producers for tremendous increases is based on the premise that cheese is one of the foods *needed* in the diet of American citizens as well as for special defense purposes. *The industry has rallied to supply enough cheese for both.*

But, along with this program for increased production on the Food Front, the government is conducting an educational campaign to tell citizens about all of the "protective" foods that help build strong Americans. In this phase, home economics teachers and students can contribute a great deal.

Right now, probably, you are explaining how such foods as meat, eggs, grains, fruits, vegetables, milk, butter and cheese help to "protect" the human body. Many of the laymen you talk with will be interested to learn that it takes more than a gallon of fresh milk to make a single pound of cheese . . . that most cheeses contain from 20% to 25% high-quality protein and from 25% to 30% milk fat. Many a mother is delighted to discover that six ounces of American cheddar cheese supply approximately as much milk calcium and milk phosphorus as a whole quart of fresh milk; that cheese is an excellent source of vitamin A.

American housewives are becoming acutely conscious that their defense jobs begin with serving wholesome, properly balanced meals. America needs citizens with stamina. To see that Americans learn *more* about proper nutrition is an important job for all of us in the food field.

EDUCATIONAL DEPARTMENT
KRAFT CHEESE COMPANY

Thanks to the educational work of America's food editors, home economists and food manufacturers, American housewives have a better background in nutrition than the women of any other country. And this educational program must be even more widely spread . . . must reach the homes of all Americans wherever they may be.

Current Literature

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Volume 8, October 1941

*Some recent advances in the physiology of the alimentary tract. A. C. Ivy.—p. 361.

*Enterogastrone—significant steps in development of the present conceptions. J. P. Quigley.—p. 363.

*Present status of urogastrone. J. S. Gray.—p. 365.

*The gastric secretory depressant in urine. M. H. F. Friedman and D. J. Sandweiss.—p. 366.

*The effect of urine extracts on peptic ulcer. An experimental and clinical study. D. J. Sandweiss, M. H. Sugarman, M. H. F. Friedman, H. C. Saltzstein and A. A. Farbman.—p. 371.

*Qualitative circulatory deficiencies observed in peptic ulcer. I. Chemical composition of the blood. H. E. Riggs, J. G. Reinhold, R. S. Boles and P. S. Shore.—p. 383.

*A comparison of the Meulengracht and Sippy therapies in the care of bleeding peptic ulcers. E. S. Emery, Jr.—p. 387.

Alimentary Tract. The alimentary tract ranks close to the anterior lobe of the hypophysis in the number of active principles it elaborates. Secretin, cholecystokinin, and enterogastrone are gastro-intestinal autacoids or hormones which are well established by physiological evidence; gastrin and enterocrinin have also been established by physiological evidence, but further study is necessary; villikinin, which stimulates the movements of the villi, and enterocin, which stimulates the movements of the intestine, have not been definitely established. Duodenin is a substance in intestinal mucosa which plays a role in providing for the deposition or utilization of the sugar that is absorbed from the intestine. This hormone is supposed to assist in the regulation of the blood sugar level. Secretinase is an enzyme-like substance, found in blood plasma, which inactivates secretin.

Enterogastrone. Enterogastrone, through its marked influence on gastric motility and secretin, normally suppresses the rate of gastric secretion and evacuation. It thus minimizes trauma to the pyloric sphincter region and retards peptic ulcer.

Urogastrone. Urogastrone is a substance found in normal urine which will inhibit gastric secretion and motility. It resembles the hormone, enterogastrone, which mediates the humoral inhibition of gastric secretion and motility produced by the ingestion of fat and which is extracted from the intestinal mucosa. It is hoped that urogastrone will be effective in controlling gastric acidity, without restriction or modification of the diet or administration of alkaline or neutralizing agents.

Gastric Secretory Depressant in Urine. A substance which inhibits gastric secretion when administered intravenously is secreted in normal subjects. It inhibits the gastric secretion stimulated by insulin, histamine and food.

Urine Extracts in Ulcer. Female urine both during pregnancy and at other times, contains a principle capable of benefiting ulcers experimentally produced in dogs.

Circulatory Deficiencies in Peptic Ulcer. Significant deficiencies in serum total protein, albumin, and vitamin C concentrations were demonstrated in 52 cases of peptic ulcer, indicating that adequate nutrition is important in the prevention and treatment of ulcer.

Meulengracht vs. Sippy. The mortality on the Meulengracht regimen closely approximates the Sippy treatment, but the diet is more agreeable to the patient. There was no evidence that bleeding stopped more quickly on the Meulengracht regimen or that the extra food intake increased the rate of blood regeneration.

AMERICAN JOURNAL OF THE MEDICAL SCIENCES

Vol. 202, October 1941

*Studies of the B vitamins in the human subject. I. The intake of thiamine and its relation to other dietary constituents in food selected by the normal subject. K. O. Elsom and T. E. Machella.—p. 502.

*Studies of the B vitamins in the human subject. II. Urinary excretion of ingested thiamine in patients with chronic hepatic disease. T. E. Machella and K. O. Elsom.—p. 512.

Thiamin Intake. Seven subjects who freely selected the type and quantity of food, exceeded the theoretical requirement for thiamin by 40%. A linear relationship existed between the daily intakes of protein and thiamin, and a positive correlation was observed between the fat and thiamin content of the diet.

Urinary Thiamin. On a basal diet no essential difference occurred in the percentage of ingested thiamin excreted in the urine of patients with hepatic disease and in that of control subjects.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 31, September 1941

*Studies of rebaking cream-filled pastries. F. W. Gilcreas and M. B. Coleman.—p. 956.

*Health problems in national defense. G. C. Robinson.—p. 969.

Nutrition in national defense. F. G. Boudreau.—p. 977.

Vol. 31, October 1941

*Dark adaptation characteristics of private school children measured with the adaptometer. C. E. Palmer.—p. 1063.

*Medical evaluation of nutritional status. W. M. Schmidt.—p. 1068.

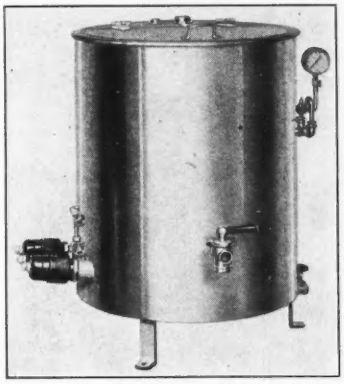
Selecting cases of anemia among adolescents. D. G. Wiehl.—p. 1073.

*Chemical methods for determining the plasma level of vitamin C. H. D. Kruse.—p. 1079.

Rebaking Cream-filled Pastries. Staphylococci in custard fillings were rendered nonviable by heating for 15 minutes at from 216–220°C. Rebaking eclairs, chocolate cream pie, and Boston cream pie for 20 minutes at 216°C. did not impair the appearance or palatability. This procedure in bakeries should reduce greatly the incidence of

---

Contributed by Colleen Cox Hambleton, Food Utilization Division, Bureau of Home Economics, U. S. Department of Agriculture, Beltsville, Maryland; and Quindara Oliver Dodge, Women's Educational and Industrial Union, 264 Boylston St., Boston.



The New GROEN

STEAM JACKETED

ELECTRIC KETTLE

HEATS 75 TO 100% FASTER!

A new flexibility in hygienic cooking is afforded by this newly designed GROEN Steam Jacketed Electric Steam Generating Kettle. Recent tests have demonstrated the ability of this new kettle to boil water 75 to 100% faster than other types of steam jacketed electric kettles.

REDUCES OPERATING COSTS

This new kettle generates its own steam . . . and cooks with live steam rather than with hot water in the jacket. Heat loss is reduced to a minimum. Entire kettle and steam generating unit are fully enclosed in a specially designed stainless steel insulated outer casing.

SIMPLIFIES VOLUME COOKING

Here is a handsome, highly efficient kettle which is designed to cook faster and to cut your operating costs to a minimum. Look into this exceptional unit. Write us for more complete details.

GROEN MFG. CO., INC.

FIFTY YEARS OF FINE KETTLES

4536 W. ARMOTAGE AVE., CHICAGO, ILL.

Beauty that Improves "Bedside Appetite *Appeal*" of every Meal . . .

Milapaco

Lace Papers of Character

REG. U.S. PAT. OFF.

Lace Paper Tray Covers

In your Tray Service, "Frame" your carefully planned menu in the beauty of Lace Paper. It lends an extra bit of "eye appeal" that cannot help but perk up the appetite. Makes your trays even more inviting.

Milapaco Lace Paper Tray Covers are highly practical, too. Crisp, clean, sanitary in their snowy whiteness, they help speed up kitchen service, reduce laundry and sterilizing costs, save valuable linens, lend greater variety to tray service—with the many different patterns available.

Ask your Jobber for Samples of Milapaco Lace Paper Tray Covers—and for Milapaco Souffle Cups and Shallow Jelly Dishes.

Above—Milapaco No. 30501 Tray cover, and Milapaco ★ Souffle Cup and Shallow Jelly Dish shown with standard Hospital Tray. ★

Milapaco

Lace Papers of Character

REG. U.S. PAT. OFF.

MILWAUKEE LACE PAPER COMPANY

1306 East Meinecke Avenue Milwaukee, Wisconsin

Established in 1898

food poisoning induced by the enterotoxins of staphylococci in custard-filled products.

Health Problems. About 40% of the young men of our country at ages 21–35 are either physically unfit to enter training for military service or are fit for limited service only. Rejections because of defective teeth were over four times as high as in the World War draft; otherwise, the important causes of rejection today are the same as those in the World War draft. Available measures for prevention and correction of important causes of rejection and possible plans for rehabilitation are discussed.

Dark Adaptation. The dark adaptation of 175 healthy Jewish high school children ranging in age from 12–19 years and of relatively high-income level was studied. Preliminary analysis of the diet histories indicated that the diets of approximately 40% provided less than 5000 I.U. vitamin A per day. Eighteen per cent of the same group were receiving smaller daily allowances of vitamin C and calcium than are recommended. Visual thresholds for boys did not differ significantly from those for girls, nor was there any significant difference in threshold as between groupings.

Nutritional Status. Assessment of skeletal development against standards of the Western Reserve University was carried out in conjunction with a study of nutrition. The median skeletal ages for each chronological age class did not differ markedly in the private and public school groups.

Vitamin C Determinations. In appraising the nutritive condition of pupils in two New York high schools, one from high-income, the other from low-income families, data were obtained mostly by the macrocolorimetric method on the vitamin C level of the blood. For both boys and girls a greater proportion in the low than in the high-income group showed low vitamin C levels.

FOOD RESEARCH

Vol. 6, September–October 1941

*Ascorbic acid (vitamin C) content of red raspberries preserved by the frozen-pack method. E. N. Todhunter and R. C. Robbins.—p. 435.

Nutritive value of agar and Irish moss. H. W. Nelson and J. W. Schaller.—p. 461.

*Vitamin A assays of plant tissues; potential sources of error in sampling. L. E. Booher, E. M. Hewston and R. L. Marsh.—p. 493.

*Effect of storage conditions on palatability of beef. R. M. Griswold and M. A. Wharton.—p. 517.

*Reliability of organoleptic tests. J. W. Crist and H. L. Seaton.—p. 529.

Vitamin C Content Red Raspberries. Varietal differences in ascorbic acid content of frozen-pack red raspberries ranged from .15 to .35 mg. per gram, as determined by the titration method. The addition of sugar to the raspberries before freezing appeared to have some protective action on the ascorbic acid but the data are not conclusive. Comparison of fresh and frozen-pack raspberries of the same harvesting showed little difference in ascorbic acid content on the moist-weight basis, but when calculated to the dry-weight basis the fresh berries contained more ascorbic acid.

Vitamin A Assays. Experimental evidence is presented indicating that vitamin A values obtained by biological assays (rat-growth method) of many raw plant tissues may be vitiated, unless precautions are first taken to inactivate any enzymes present that are capable of catalyzing the oxidation of carotene. In contrast to green snap beans and leafy green vegetables, the vitamin A values of carrots and sweet potatoes, as determined by biological assays, were unaffected by cooking. Presumably, therefore, these root vegetables do not contain appreciable amounts of any enzyme capable of catalyzing the oxidation of carotene, or this enzyme was not active under the conditions of these experiments.

Storage and Palatability of Beef. Meat stored 37 days had a somewhat stronger aroma and flavor but was slightly less juicy than meat stored 9 days. Differences in the tenderness and desirability of flavor of meat stored for the two periods were small. Meat held at 60°F. for 48 hours was less desirable in appearance and odor than meat held under similar conditions but with ultraviolet lights. The palatability and tenderness of meat ripened by these two methods were similar, however, showing that the lights themselves did not affect the quality of the stored meat. Meat stored at 36°F. and meat held for the same length of time at 60°F. with irradiation graded approximately the same in palatability, except for tenderness, which was slightly greater in meat stored at the higher temperature.

Reliability of Organoleptic Tests. We are waiting for the discovery of some all-inclusive and authentic technical method, or sets of methods, for the determination of quality in packed fruits and also vegetables. An effort could be made to professionalize the business of tasting packed foodstuffs, which, theoretically at least, might lead to perpetuated classes of operators similar to "wine tasters" and "tea tasters." The senses of taste and smell could be made sufficiently acute to distinguish accurately and successively even the finest differences in quality. This, however, assumes the truth of the reputed efficiency of the wine and tea tasters. Or we could give up the idea of "tasting panels" and substitute "looking panels." This would conform with the buying public's chief means of inspection and selection of edible products. It would mean reliance on the proposition that an actual correlation between appearance and taste does exist. We might assume, too, that the average American housewife can be counted upon to prefer and to serve a fine-looking, but not necessarily fine-tasting product. Finally, there is the possibility of conducting additional experiments which might facilitate a more accurate and consistent exercise of the sense of taste, either alone or jointly with vision and smell, in ordinary operators. The difficulties are many and especially subtle, because the elements involved are so largely psychological, or in other words, mainly subjective in nature.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 117, October 4, 1941

*The applied physiology of bile secretion and bile salt therapy. A. C. Ivy.—p. 1151.

Bile. Protein promotes the formation of bile and cholic acid in the dog. Bile salt output is relatively constant because the rate of production is balanced by the rate of "destruction." The rate of production depends primarily on the amount of protein metabolized and the rate of destruction on the rate of enterohepatic circulation of a particular quantity of cholic acid. Given a high protein diet and otherwise normal conditions, a cholecystectomized subject should pass a larger volume of bile through the common duct than a subject with a normal gallbladder.

JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 141, October 1941

*The sodium chloride levels and the effect of sodium chloride administration on the abnormal manifestations associated with a deficiency of the filtrate factors of vitamin B in rats. E. P. Ralli, D. H. Clarke and E. Kennedy.—p. 105.

*Effects of insulin upon the production of ketone bodies. M. Somogyi.—p. 219.

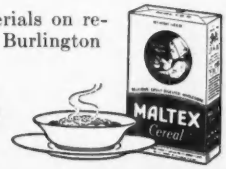
Vitamin B. Rats on a low-salt intake developed graying of the fur 55 days sooner than did the animals on the high-salt intake. Graying was more pronounced and occurred in all but one of 9 rats. The serum chloride levels were within normal limits, as were the serum protein values.

This appetizing hot brown cereal owes its distinctive flavor to a special method of manufacture which converts part of the carbohydrate content of the Toasted Wheat and Malted Barley into maltose and dextrins. This gives Maltex a slightly sweet taste so that less sugar is required.

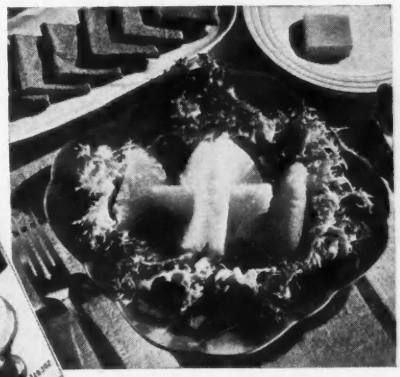
An average serving of Maltex contains 23 grams of Carbohydrate, 5 grams Protein, .016 gram Calcium, .081 gram Phosphorus, 1.14 milligrams Iron and .15 milligram Copper. Also Maltex is a *good natural* source of Vitamin B_1—each ounce, dry, contains 50 U. S. P. units.

Free Sample and Teaching Materials on request. Write Dept. FF, Maltex, Burlington Vermont.

Maltex does not lump in cooking—costs less than a cent a serving and is readily digested by even the youngest child.



MALTEX CEREAL



FREE SAMPLE

Mail this coupon for free sample Cellu Juice-Pak Fruit and the latest Cellu catalog of foods for the restricted diet.

Name .....
Hospital .....
City .....
State .....

FOR THE DIABETIC

Unsweetened Fruits Packed in Natural Juice

For mealtime variety in salads, fruit cups, and desserts, suggest CELLU JUICE-PAK FRUITS. Packed in natural, unsweetened juice they retain the full-bodied flavor of sun-ripened fruit. A complete selection of all popular varieties. Labels carry food value analysis to help simplify diet measurement. Send for free sample and the latest CELLU catalog of foods for restricted diets.

CELLU LOW CARBOHYDRATE *Dietary Foods*

CHICAGO DIETETIC SUPPLY HOUSE Inc.
1750 W. Van Buren St. CHICAGO ... Illinois

PINS AND PLAQUES

WITH

The American Dietetic Association Seal

Gold electro plate/nickel silver	$1.50
Gold electro plate/nickel silver with enamel.	1.75
Ten karat gold without enamel	5.00
Ten karat gold with enamel	5.25
Five-inch bronze seal on shield-shaped mahogany board	7.75
Three-inch bronze seal on shield-shaped mahogany board	5.50

Plus state and federal tax

Send orders to

The AMERICAN DIETETIC ASSOCIATION

making check payable to L. G. Balfour Company

orders not accompanied by checks will be shipped C.O.D. by the L. G. Balfour Company

CAFATRAYS

Eleven Correct Sizes— One for Every Service

Through a priority rating given by the Government to Hospitals and Schools, Cafatrays—the best serving trays in the world—may still be obtained for such institutions as replacement or maintenance items.

Ask your Equipment dealer, and *demand genuine CAFATRAYS*

CHELSEA PRODUCTS · 281 11th Ave., New York

Insulin and Ketone Formation. Insulin exerts two opposite effects upon the ketonemic level; for some time after injection it causes a decrease, but after protracted states of hypoglycemia it effects a rise. Both effects occur in normal as well as in diabetic men and animals, but appear in the diabetic on a magnified scale. The two-phase effect of insulin upon the rate of formation of ketone bodies in the liver closely parallels the effect of insulin upon the rate of hepatic glycogenolysis.

JOURNAL OF NUTRITION

Vol. 22, October 1941

*The pathology of riboflavin deficiency in the rat. J. H. Shaw and P. H. Phillips.—p. 345.
*Vitamin B complex and fat metabolism. J. C. Forbes.—p. 359.
*The influence of previous régimes of protein feeding on the endogenous nitrogen metabolism of rats. R. B. French, J. I. Routh and H. A. Mattill.—p. 383.
*The riboflavin content of fish products. F. L. Billings, J. Biely, H. Fisher and C. Hedreen.—p. 425.

Riboflavin. Severe riboflavin deficiency in the rat results in a partial paralysis of the legs. This paralysis can be produced more easily on a high-fat ration and is prevented by the daily feeding of crystalline riboflavin. A deficiency of riboflavin also causes histopathologic changes in certain endocrine glands, the testis and the central nervous system.

Vitamin B and Fat. The administration of thiamin, riboflavin, pyridoxin, nicotinic acid and calcium pantothenate to rats on a fat-free, 10% casein, high-carbohydrate diet, led to the production of fatty livers containing quite a high concentration of cholesterol. When nicotinic acid was absent the animals developed fatty livers whose cholesterol content, though elevated, was low in comparison with that obtained when nicotinic acid was also fed. Addition of choline exerted a definite lipotropic action which was less pronounced in the animals receiving nicotinic acid.

Endogenous Nitrogen Metabolism. When rats are subjected to repeated low-protein or non-protein régimes, interspersed with periods of realimentation, they overcompensate for the loss of body protein and accumulate unusual stores. Such animals require a longer time on a low-protein diet before their urinary nitrogen falls to an acceptable endogenous level and also suffer a greater loss in weight than the controls.

Riboflavin in Fish. Fish liver meal proved to be richest in riboflavin content; viscera, roe and "stick water" meal were next in value; muscle meal and milt meal were lowest. Fish meals showed considerable variation in their riboflavin content due to different methods of manufacture and various types of material used. Fish liver meal, like liver meal prepared from domestic animals, is one of the richest natural sources of riboflavin.

SCIENCE

Vol. 94, October 17, 1941

The comparative value of the blood plasma vitamin A concentration and the dark adaptation as a criterion of vitamin A deficiency. O. Bodansky, J. M. Lewis and C. Haig.—p. 371.

SCIENTIFIC MONTHLY

Vol. 53, October 1941

Vitamin restoration of foods as viewed by the physician. R. M. Wilder.—p. 295.

AMERICAN RESTAURANT MAGAZINE

Vol. 25, October 1941

*Profits "R" in season. G. L. Wenzel.—p. 47.
Bran muffins—plain, pecan, raisin and pineapple. M. B. Strause.—p. 52.
What the dishwasher thinks. A. Fiske.—p. 68.
*Research for the small operator. J. W. Ebersole.—p. 76.
Secrecy or open-handedness about recipes? J. G. Frederick.—p. 94.
*Thoughts for restaurant managers. E. H. Webb.—p. 106.

Profits "R" in Season. Annual nation-wide survey of 240 restaurants shows that an average restaurant should have a food cost percentage of 45 or less to show a profit. Use of seasonal foods lowers food cost. Seasonal charts for fruit, vegetables, dairy products, meats, and poultry indicate whether the supply for October was at peak, good, coming in, or going out.

Small Restaurants. These represent 76% of all operators but only 24% of the total restaurant business. The 48% who fail in business annually represent operators who sell food at a loss, operate their restaurants without efficiency, and do not use good merchandising methods. Specific examples of satisfactory plans for operation and personnel management in a small restaurant are discussed.

Restaurant Managers. Restaurant managers may get a better idea of customer reaction if they take the help into their confidence. Patrons may be divided into three groups: those who never complain to the manager but may to hostesses or waitresses; the chronic complainers; and those who do not complain to the person at fault but smoothly tell the manager what is wrong. Employee confidence, team work, and meetings with employees are essential to handle problems. Suggests diplomatic methods of handling the three groups of customers.

BUILDINGS AND BUILDING MANAGEMENT

Vol. 41, September 1941

*Relations with the press. C. Davidson.—p. 19.
*Civilian fire defense.—p. 38.

Vol. 41, October 1941

*Fire-safe air conditioning.—p. 33.

Vol. 41, November 1941

*Business acoustics. H. J. Sabine.—p. 24.
*Hard heels: a needless risk. R. Jarden.—p. 32.

Press Relations. Every firm or institution needs to build a reputation with the press as a dependable, authoritative, and cooperative source of usable information. Information must have a definite news value, and must not be based on half-truths. The story is more likely to be accepted if news story technique is observed.

Civilian Fire Defense. Managers of buildings, now that defense is the country's chief concern, must do two things: check available fire-fighting equipment and its condition and secure new or additional equipment where necessary; and strengthen private fire brigades and organize new ones where they are needed. In planning for possible incendiary bombings, building management must formulate lines of fire-fighting to include roof spotter, building fire wardens, and brigades. In studying the effects of high explosive bombs on buildings it has been found that those with walls of the load-bearing type are most vulnerable, even wooden frame structure will stand up under such blasts better. A steel frame building is extraordinarily resistant to modern bombs and earthquake construction is ideal for bomb resistance. It will be necessary to camouflage high buildings in case of air attack.

There are now 30

FOR VARIETY IN THE ADULT SPECIAL DIET

Strained Peaches and a delicious Chicken Soup have just been added to the Gerber line. All these special baby foods are low in fibre content and only very slightly seasoned. All are prepared to retain vitamins and minerals in high degree. You are invited to write for professional reference cards and recipes for adult special diets.

Cereals		Soups and Meat Dishes	Vegetables	Desserts
Cereal Food	Strained Foods	Liver Soup with Vegetables	Asparagus	Apricot and Apple Sauce
Strained Oatmeal		Vegetable & Lamb	Beets	Apple Sauce
Cooked-in-Milk Strained Cereal		Vegetable Soup	Carrots	Custard Pudding
		Chicken Soup	Green Beans	Pear and Pineapple
			Mixed Vegetables	Prunes
			Peas	Peaches
			Spinach	
	Junior Foods	Vegetable & Beef	Creamed Potatoes	Pineapple-Rice Pudding
		Vegetable & Lamb	Chopped Spinach	Apple-Prune-Tapioca Pudding
		Vegetable & Liver	Chopped Green Beans	
		Chicken, Rice, Celery	Chopped Carrots	

Gerber's
Baby Foods

Guaranteed by Good Housekeeping

GERBER PRODUCTS COMPANY, Dept. 231, Fremont, Mich.

Air-Conditioning. Six considerations in building air-conditioning systems are: position of automatic dampers and installation of an automatic motor stop, screening return ducts, non-inflammable air filters, door openings in horizontal ducts, easily accessible remote control and sprinklers in the room housing the system.

Acoustics. Fundamentals of acoustical treatments are fully described. Noise changes in quality as well as in loudness when sound deadening methods are used. The amount of reduction depends on the ratio of area treated to room surface areas, with sound absorption based on vibration and not merely porosity. This requires light, flexible materials.

Hard Heel Hazards. Hard heels rather than waxed floors are blamed for many patron and employee accidents. Liability insurance premiums increase with the proportion of accidents. It is suggested that employees have the safety advantages of rubber over leather heels pointed out to them.

FOOD INDUSTRIES

Vol. 13, August 1941

*Cereal antioxidant prevents tallowiness in butter. W. J. Corbett, P. H. Tracy and C. H. Hanse.—p. 34.
*How locker plants control quality. H. H. Plagge.—p. 37.
*Rigid sanitation necessary in packing fresh crabmeat. C. S. McCleskey and L. Tobin.—p. 39.
*Flash sterilization kills spoilage spores. D. J. Wessel and H. A. Benjamin.—p. 40.
*Brief summaries of AMS standards for canned foods.—p. 43.
*Pectin decomposition *vs.* sugar inversion in jelly. G. L. Baker and W. M. Goodwin.—p. 45.
*Jam jar standardized for Army and public.—p. 50.
*How shall we label it? G. W. McBride.—p. 55.
*Bacteriology of candy.—p. 85.
*Process determination in canning.—p. 85.
*Vitamin D in milk.—p. 86.
*Food fortification and restoration.—p. 87.
*Bacterial death rates in frozen egg products.—p. 87.
*Bacteriology of nut meats.—p. 88.

Vol. 13, September 1941

*Laboratory solves seafood problems. H. L. Wells.—p. 50.
*Brief summaries of AMS standards for canned foods.—p. 51.
*Dehydration looks up; pilot plant reveals new information. L. V. Burton.—p. 53.
*Research on hydrolysis simplifies manufacture. G. L. Baker and M. W. Goodwin.—p. 56.
*Lend-lease and defense increase food demand. G. L. Montgomery.—p. 62.
*Hot-frosted foods.—p. 69.
*F & DA concludes hearing on standards for bread.—p. 70.
*Dried egg output to be expanded.—p. 71.
*Government will take 20% of salmon.—p. 71.
*Kitchen locker plant.—p. 73.
*Navy salutes boned beef.—p. 73.
*OK's canned, powdered fruit juice for Army.—p. 74.
*1941 tomato pack short of SMA goal.—p. 74.
*Soldiers test value of fortified bread.—p. 75.
*Eating habits change.—p. 77.

Vol. 13, October 1941

*Putting false faces on formulas. W. R. Van Meter.—p. 41.
*New quick freezer tests foods in South. E. Mauldin.—p. 46.
*Four basic factors in detergency. F. D. Snell.—p. 48.
*Too many accidents in food plants.—p. 50.
*Deleading maple sirup by clarification. C. J. Tressler and W. I. Simmerman.—p. 52.
*Air line must buy top-flight foods. M. Inwood.—p. 64.

Butter. The development of off-flavors can be retarded and the keeping quality of butter improved through the use of a syrupy cereal antioxidant. Addition of the cereal antioxidant can be made in three ways—in cream, salt, and on the wrapper.

Quality Control. The selection of product, preparation, processing, packing and labeling are all vitally essential to the successful preservation of fruits and vegetables in refrigerated locker plants. These methods not only help to obtain but also retain quality in frozen fruits and vegetables.

Crabmeat. Fresh crabmeat is more sensitive to contamination than most foods. A sanitary product results when the hands of the workers, the dipping brine and the ice are doubly checked for cleanliness and every step of the operation is watched.

Tomato Juice. Experimental studies indicate that the flash processing of tomato juice, done by a continuous, short-time, high-temperature process kills heat-resistant spores and shows commercial promise.

Standards. Includes digests of the standards for canned goods issued by the Agricultural Marketing Service. A complete text of the standards, indispensable to those in the food industry who control quality, can be obtained from the Agricultural Marketing Service, Washington.

Jelly. The physical quality of jelly is improved by a short and controlled period of both evaporation and hydrolysis. It is believed that hydrolysis of the pectin rather than hydrolysis of the sucrose is the determining factor.

Glass Containers. The new 11-oz. glass preserve container has been standardized to meet the requirements of the National Preserves Association as well as the Army. The advantages are that the container is more suitable for table use, its resealing closure means economy in the use of preserves; it is non-tippable, compact and space saving and the average serving spoon can be used with it conveniently.

Labels. Many questions about the labeling of foods to conform with the federal food laws are answered and the principles discussed in more than 200 answers by the Food and Drug Administration to inquiries from the industry.

Candy. Bacterial examination of several types of confections showed that the initial condition of the raw materials shares responsibility with sanitary conditions during manufacture when the final bacterial count is high.

Canning. A series of test packs is being run to determine the selection of a sterilization process which will give adequate protection without unnecessary expenditure of time and heat. These packs are inoculated with a suitable test organism depending on the conditions to be met.

Milk. Discusses fully the amount of vitamin D that is normally found in milk as well as many commercial methods by which the vitamin D content of milk can be increased.

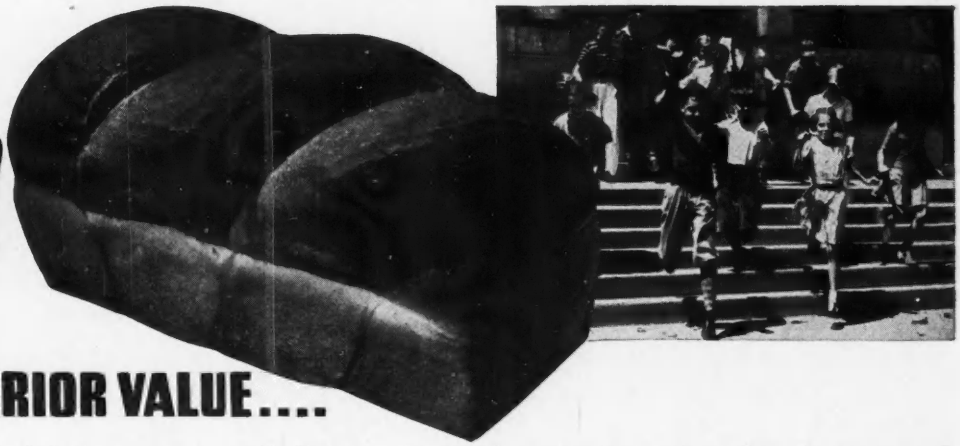
Food. It is unwise to fortify foods haphazardly with vitamins and minerals, particularly if fortification is carried above natural levels. If vitaminization is limited to restoration of values lost in food processing, industry can follow a systematic program of restoring the losses incurred in food processing.

Frozen Egg Products. Salt in combination with low temperatures exerts a bactericidal effect in frozen egg products. Bacteria which grow best at 68°F. are least affected in frozen storage. Of the organisms which grow at 98.6°F., those of the coli-aerogenes group suffer the fastest drop in viability in frozen storage.

Nuts. Bacterial examination of various samples of nut meats showed wide variability. Method of handling is an influential factor. The commonest organisms were aerobic spore-forming rods.

Seafood Problems. Crab shells should be removed before cooking and the viscera washed out under running water. No definite results are available for freezing tests with fish products, but indications are that no one temperature is best for all. Whole frozen crabs are prepared by removing back shell in one piece, washing out viscera, cooking the crab, replacing shell, and the whole is then packaged in cardboard with the shell visible through a transparent window in the top. Transparent cellulose has been found most satisfactory for wrapping frozen products.

Food of SUPERIOR VALUE....



● High on the list of foods necessary to avoid dietary deficiency or "hidden hunger" are the non-fat solids of milk — one of the "protective" foods supplying vital minerals and vitamins and very important for its protein value.

Milk proteins are "complete" proteins, capable of maintaining life and supporting growth — "complete" because they provide all ten essential amino acids which must come from food. If any of the ten are lacking, growth will not be normal or somewhere and somehow the processes of life will be halted.

Milk in bread, for example, not only provides the full value of the milk proteins but, due to the amino acid supplementing effect, there is a higher utilization of the cereal proteins than could otherwise be obtained.

In addition to improved flavor and appetite appeal, dry milk solids not over 1½% fat improves the nutritive value of your bread and other foods. No other food ingredient does so much at so low a cost.

AMERICAN DRY MILK INSTITUTE, Inc., 221 N. La Salle St., Chicago

Jullicum REG. U.S. PAT. OFF.

RENNET DESSERTS THE *NEW* WAY

Almond
Caramel
Coffee
Orange
Vanilla
Butterscotch
Chocolate
Lemon
Raspberry
Sherry Wine
Plain

Congratulations to the American Dietetic Association for achievements of the old Journal in the field of dietetics and best wishes for success of the new.

JULLICUM rewards users generously.

A liquid, only a few seconds stirring mixes the flavored rennet in milk.

Many flavors of excellent quality provide good taste and enjoyment.

Low cost for economy.

Price $1.25 the pint, enough for 32 pints milk.

6 pints to the case, any assortment.

Express or freight prepaid.

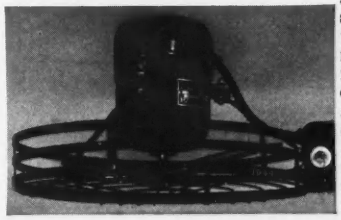
Order through your supply firm or direct. Deliveries are made from the laboratory, this insures freshness and good rennet action.

SAM'L B. KIRK, Philadelphia, Pa.

END "B. O." in REFRIGERATOR and COLD STORAGE ROOMS with Reco

REFRIGERATOR CIRCULATOR

Wet refrigerator and cold storage rooms are extravagant and unsanitary—and today, absolutely unnecessary. Reco engineers have solved the problem with the Reco Circulator, which provides, for the first time, proper air circulation inside the refrigerator. Directing the flow of air *upward*, frost on coils is eliminated, walls and floors become dry, bacteria, molds and fungi growth retarded, and COST of refrigeration is reduced.



Reco is available in space-saving ceiling mounted model, as shown, or in portable, adjustable floor models. Learn how you can now keep refrigerator air sweet, and reduce costs—Send for Reco Bulletin, today.

REYNOLDS ELECTRIC COMPANY

Makers of Reco Circulators, 4-Speed Automatic Mixers, Vegetable Peelers, etc.

2659 West Congress St., Chicago, Ill.

EASTERN SALES OFFICE: 256 W. 31st St., New York, N. Y.

Canned Food Standards. Abstracts of Agricultural Marketing Service standards for canned food include a general description of the product and full specifications for each grade, tentative standards for canned fruit cocktail and canned ripe olives, and a final standard for canned mushrooms.

Vegetable Dehydration. A new method for vegetables includes a process of enzyme control by blanching with hot water, similar to that used in preparation of foods for freezing, followed by a tray drying operation. Formulae for temperature, humidity, and air motion schedules for the different vegetables, under automatic control, have been developed. From 20,000–25,000 lb. prepared raw materials have been produced in a 24-hour day of 6 cycles. Dehydrated vegetables are commercially profitable, underselling both the frozen or canned articles. U. S. choice quality vegetables are used. Dehydrated vegetables have entered the soup market under a number of trade names. Army tests have shown that many dehydrated vegetables processed under this new method are acceptable.

Cranberry Jelly. Cranberry jelly may be prepared without the necessity of a boiling temperature at any time. Sterilization at 165°F. after canning produces a satisfactory product. An outline of the method of making cold cranberry jelly, laboratory experiments with pulp at 180°F. and at boiling temperature, and a sketch of equipment and flow in the manufacture are given. Preparation by this method necessitates no equipment for boiling, and cooling apparatus is optional.

Increased Food Demand. A noticeable effect on food supply and on food processors will undoubtedly result from shipments abroad. Domestic food demands have changed in quality and price but not greatly in either quantity or kind. Products being shipped to Europe will be largely the protective foods and edible fats. Flour, corn syrup, dextrose, starch, milk products, canned citrus fruits and juices, dried fruits, canned tomatoes, canned beans, fats, and oils are the products most likely to be sent in quantity and therefore shortages of these and price rise may be expected.

Hot Frosted Foods. Thompson's Spa, Boston, has introduced "Hot-Frosted Foods." Menu items are cooked as for serving and then quick-frozen, packaged, and sold to be kept under refrigeration until time of service. The process was developed in collaboration with Frosted Cooked Foods of Boston.

Bread Hearings. Six weeks of discussion of bread standards, ending August 15, dealt chiefly with rope and mold control. Decisions concerning use of du Pont's "Mycoban" and provisions for the optional use of vinegar or monocalcium phosphate in rope prevention are still waiting. Standards for breads other than white have been proposed by the government to allow easier recognition but industry practice differs greatly from the standards. Amounts of ingredients used to enrich bread are tabulated as to minimum and maximum per pound of bread. Dietitians and bakers object to forced inclusion of riboflavin in enriched flour. Compensation was planned to make up for the 20% thiamin lost in toasting or baking.

Dried Egg Output. Expansion of egg-drying facilities to produce 100,000,000 lb. annually—eight times the present capacity, will take care of British demands. Most projects will be located in the Mid-west and have a blanket priority on materials.

Salmon. Twenty per cent of the salmon pack will be made available to lend-lease and Army purchase by informal agreement of OPACS and the canners. The buying will be sufficiently distributed among the types of salmon to prevent ceiling prices on "pinks."

Frozen Food Lockers. A frozen food locker plan, announced by Stewart-Warner Corporation, is called "Eskimo Pantry" and has a capacity of 5.14 cu. ft. It will hold 100 lb. food at 0°.

Boned Beef. Because of more efficient and effective storage on board ship, the Navy will buy boneless beef exclusively.

Powdered Fruit Juice. The use of 6 oz. canned fruit juice, 1 oz. powdered fruit juice, or 6 oz. concentrated juice per day, instead of 16 oz. fresh fruit, has been approved for the Army. Comparative cost data show that powdered juice is least expensive.

Short Tomato Pack. The drive by the Surplus Marketing Administration to increase the 1941 tomato pack 50% will fall short. The 15,000,000 additional cases was an aim rather than a need and no domestic or lend-lease shortage is expected.

Fortified Bread. Soldiers at Ft. Meade, Maryland, were given bread with fortified flour once a week, with enriched yeast twice a week, and with brewers' yeast four times for the entire month of August. Results will guide future Army use.

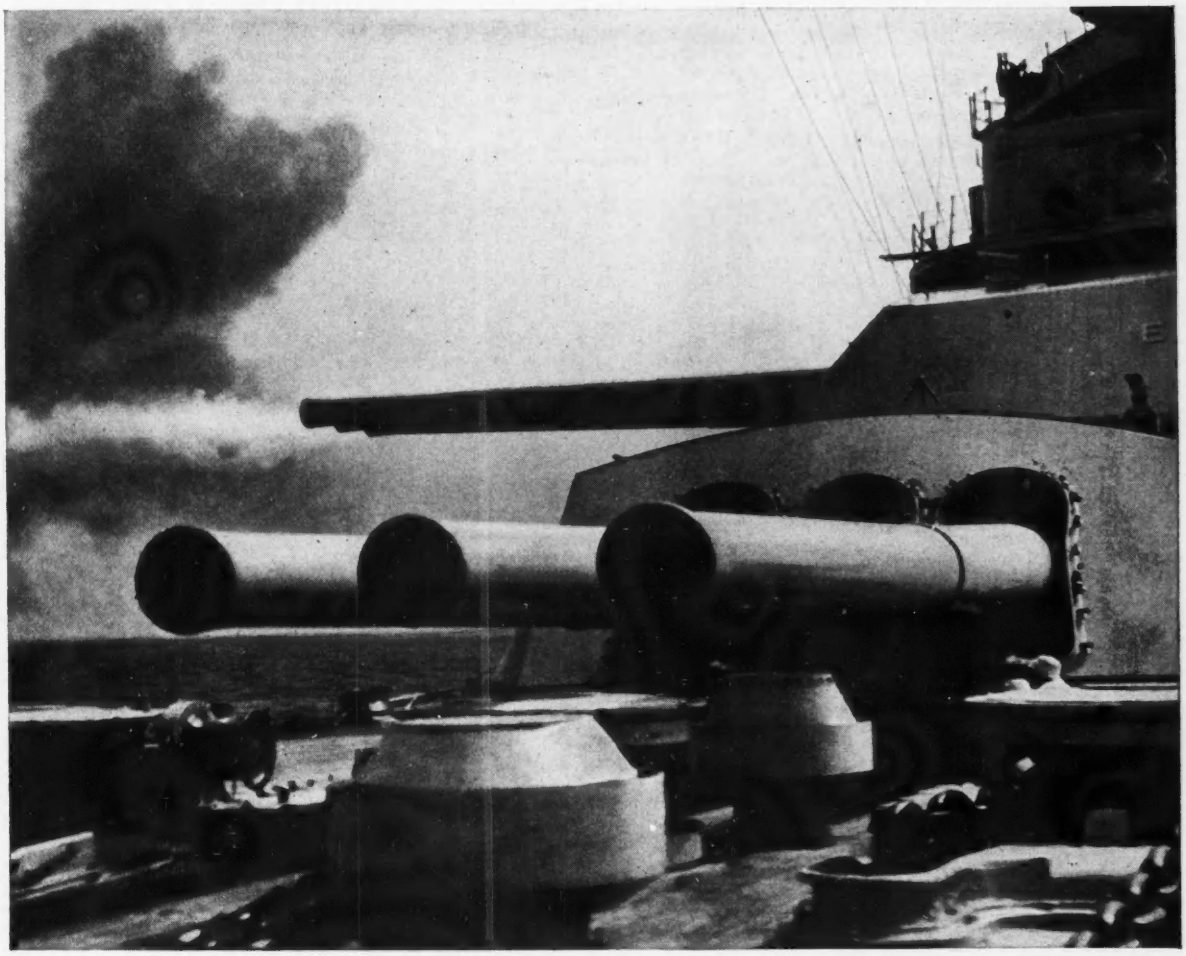
Eating Habits. Department of Commerce reports show that canned food consumption has increased greatly since 1919. Canned fruit and vegetable juices were not available then but are widely used at present. Wheat flour consumption has decreased markedly and demands for chicken and turkey have increased. Chocolate, cocoa, soft drinks, potato chips, peanut butter, cheese, and sausage consumption has also jumped markedly.

Disguising Formulas. If money and time have been spent in perfecting a formula it is worth while to protect against disclosure to unauthorized persons the factors of time, temperature, ingredients, and procedures that are invoived in such formulas. Safeguarding of such information can be accomplished by "adopting arbitrary measuring units, by arbitrary designation for key ingredients, and by so arranging work in the weighing, mixing and processing departments that no one individual becomes conversant with every step."

Frozen Foods. The Georgia experiment station, in cooperation with the food research department of TVA, is working on the freezing of foods grown in the South and their transportation and marketing. A portable, quick-freezing unit has been developed which has operated throughout the southern states freezing strawberries, apples, peaches, youngberries and chickens. A frozen peach pack was especially designed for use in institution food service. A series of over 200 pie-cooking tests was conducted to determine at just what stage of ripeness and under just what conditions of freezing the peaches would best retain their flavor, texture, color and shape after the cooking process. After freezing the peaches are placed in 10-lb. tins, sealed and placed in cold storage compartments held at near zero temperature.

Detergency. Detergents for food plants must be designed to remove saponifiable oils, unsaponifiable oils, free fatty acids, proteins and carbohydrates. All dirt is essentially acid in nature and therefore the initial alkalinity or *p*H of the detergent solution must be at least 10.2 so that it can react with the fatty acid in the dirt and assist in its removal. The total alkalinity of the detergent solution is important in determining the amount of additional alkaline substances to be added to the soap to neutralize this fatty acid and permit the soap alkalinity to act as a detergent. On the basis of lowering of inter-facial tension, the order of decreasing value of builders with soap is the same as for available alkalinity. The factor of deflocculating or the emulsifying power of the soap must not be lessened by adding strongly alkaline builders which interfere with the emulsifying power. On the whole alkaline cleaners are quite suitable for food industries.

Accidents in Food Plants. Accident frequency rate is



THREE ON DECK FOR ACTION

THE heavy guns of a modern battleship bear most of the brunt of the action. They are the ones that are depended upon to do a big job swiftly and surely.

Here are three Wyandotte Products which will take over the brunt of most dishwashing work.

• ***Wyandotte Keego*** is the cleaner you will want to use if you wash your dishes by machine. It rinses freely, is swift in action, economical in use, and is adapted to both hard and soft water conditions.

• ***Wyandotte HDC*** is built for use where hand dishwashing is desired. This low-cost, efficient cleanser will clean your dishes quickly and thoroughly. A little goes a long way to make light, foamy suds.

• ***Wyandotte Steri-Chlor*** is a chlorine germicide in powder form used in the final rinse after washing dishes, glasses, silver and all culinary equipment. Its use provides a definite health protection.

There are other Wyandotte Dishwashing Compounds built to meet varying water conditions. If you have unusual water conditions in your locality, your local Wyandotte Representative will be glad to check your dishwashing routine with you and recommend the proper Wyandotte Product.

Wyandotte
PRODUCTS
SERVICE REPRESENTATIVES IN 88 CITIES

THE J. B. FORD SALES COMPANY, WYANDOTTE, MICHIGAN

one-eighth higher in food plants than for all other industries, but the severity rate is just two-thirds that of American industry as a whole. Machinery is involved in one-third of all injuries. One-half of the accidents last year were of the caught-in or caught-between type. Falling, sliding and flying objects resulted in one-fourth of the injuries. Accidents occur most frequently when employees are cleaning, repairing or adjusting equipment and unthinkingly use unsafe methods of approach to the job, or disobey the known rules. Defective equipment and failure to study safe lay-out plans or set up adequate guards are also responsible for a large part of the accidents.

Maple Syrup. Maple sap is frequently collected in terneplate buckets or buckets painted with a white lead paint which results in lead contamination of the sap. Clarifying the syrup from such sap to remove the lead was successful. Syrup clarified by precipitation showed large lead reductions; filtered syrups (using filterpaper and both hot and cold filters) showed even greater reductions; and syrups treated with milk showed very great reductions. Clarifications of syrups by these methods caused no flavor changes, but did decrease the color intensity slightly.

Airline Food Service. Foods used for airline service must be of the best quality in order to appear tender, juicy and succulent at serving time, 2–4 hours after the initial preparation. Frozen fruits and vegetables have proved satisfactory for this purpose. Rolls and cakes must have a higher butterfat content to withstand the drying effects of high altitudes. Digestibility of the menu items as well as their appetite appeal, and their packed space and weight are the factors considered in menu planning. United Airlines has six kitchens spaced along its routes. As much of the buying as possible is done at the central office and requisitions are made by the chefs for each kitchen. Foods are sent from the kitchen completely prepared and carefully packed to preserve the proper temperature. Hot dishes are packed in china casseroles which can be used for service dishes.

HORWATH HOTEL ACCOUNTANT

Vol. 21, September 1941

*Sales analysis—hotel coffee shop.—p. 4.

Vol. 21, November 1941

*Average checks are higher.—p. 6.

Coffee Shop Sales. Records of the number of times a dish is on the menu and the number of times it is ordered are essential for satisfactory menu making. Illustrations of records from a transient hotel coffee shop are given with a view to dish popularity. A full month's record of luncheon entrées is classified according to fish, lamb, vegetable combinations, cold plates, Chinese dishes, poultry, egg dishes, beef, pork, veal, and salad bowls, giving menu prices, number of times on menu, and average number served. Beef, poultry, and eggs were most popular and cold plates, fish, and vegetable combinations least popular.

Higher Checks. A comparison of the average food check in September 1940 with that in September 1941 shows a total average increase of 9% for the highest priced dining rooms of the transient hotels, and an average rise of 4% in the lowest priced dining rooms. The residential hotels showed a 10% raise in total average check. Of the hotels surveyed for this report, 84% have raised their prices directly or indirectly.

HOSPITAL MANAGEMENT

Vol. 51, June 1941

*Proper dishwashing procedure important in safeguarding health of patients. H. M. Hall.—p. 56.
*Raisins for hospital fare. I. M. Lucas.—p. 60.

Vol. 52, July 1941

*Factors to be considered in purchasing new equipment for the hospital kitchen. M. Weber.—p. 47.
*"Wine-ing" your patients.—p. 50.

Proper Dishwashing. Proper dishwashing technique is determined by habits of dishwashers and type of equipment. The recommended means of safeguarding health of hospital personnel are: use of paper utensils, hot soapy water and disinfect rinse for handwashing, and very hot water for rinse in machine washing.

Raisins. Two charts show mineral and nutritive content of raisins. Included are types of raisins, methods of processing, and recipes.

Purchasing Equipment. Points to be considered before purchasing equipment are: variety and type, initial cost, economy of operation, dependability in performance, flexibility, ease of cleaning and repair. Includes comparative costs of different pieces of equipment in regard to material used in construction, sanitary qualities, appearance and durability.

Wine for Patients. It is generally agreed that wine is one of the most effective bases for the administration of vitamin B_1 to the convalescent. Suggestions are given for the use of wine in the patient's dietary.

HOSPITALS

Vol. 15, August 1941

*Institutional dietitians' contribution to nutritional program. A. B. Lothe.—p. 19.

Vol. 15, October 1941

Preventing potato rot.—p. 58.
*Hospitals should study their wage plans. E. L. Place.—p. 61.

Vol. 15, November 1941

*Food waste. H. C. Burns.—p. 53.

Dietitian's Contribution. It is the dietitian's duty to eliminate outmoded nutrition material; clarify terminology and ideas; give major consideration to the general diet and analyze food trends and their effects; and integrate nutritional activities with those of other groups.

Wage Plans. Suggests charging hospital workers a reasonable current rate for board, room, and laundry as received in order to make ready wage comparisons with similar jobs in other institutions.

Food Waste. In addition to constant checking and supervision by the dietitian, food waste can be kept at a minimum by separating the edible waste, weighing, recording, and posting the record; and by wise selection of menu, the purchasing of quality instead of quantity, and the use of standardized recipes as well as portions.

HOTEL MANAGEMENT

Vol. 40, September 1941

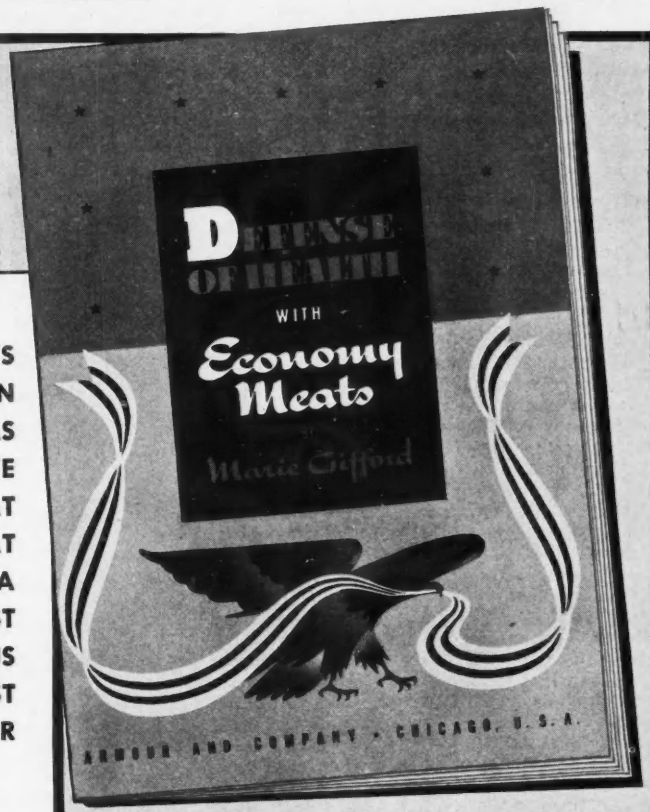
*Maids—save for Uncle Sam.—p. 6.

Vol. 40, October 1941

*The principal edible soup garnishes.—p. 36.
Notes for big food buyers.—p. 40.
*Profits from food service.—p. 44.

Waitresses. Reduction of waste on part of waitresses is suggested by: giving guests extra butter, bread, etc. only upon request; watching to see that lighted cigars and cigarettes are not left on tablecloths or table tops; keeping menus clean and picking up all extra copies; guarding against waste of ice; not using napkins as cleaning cloths; keeping tops on condiment containers to prevent foods from drying out; immediately reporting splintered chairs, broken equipment or bad stains; and cooperating with cooks and checkers to ensure quality food reaching the customer.

Your FREE COPY is Now Ready!



36 PAGES OF BASIC FACTS ABOUT MEAT'S VITAL ROLE IN AMERICA'S DIET . . . MEAT AS AN IMPORTANT PROTECTIVE FOOD . . . VITAMINS IN MEAT . . . TIPS ON SAVING THE MEAT DOLLAR . . . HOW TO FEED A FAMILY ON $1.65 MEAT COST PER WEEK . . . WEEKLY MENUS . . . 56 RECIPES FOR LOW COST MEAT DISHES. SEND FOR YOUR FREE COPY NOW.

"This booklet has been prepared as a contribution to the Nation's Nutrition Defense. Entitled DEFENSE OF HEALTH WITH ECONOMY MEATS, it is designed to help every reader select, prepare and serve more wisely that important protective food . . . Meat.

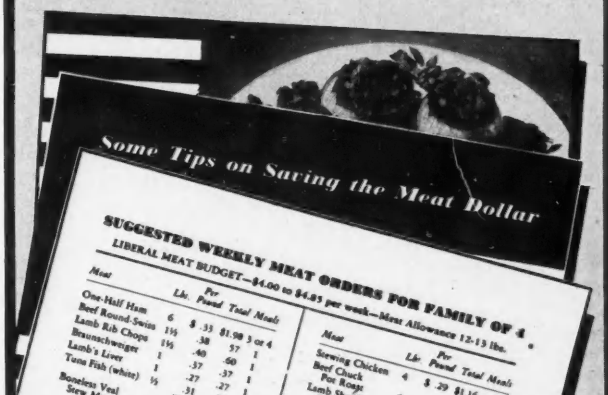
"It gives concise, up-to-the-minute information that I am sure you will find extremely helpful in your classroom work this year.

"It is an answer to the great need for practical, useful data on the Number One Food in the Nation's Diet.

"After you have received and read your copy of DEFENSE OF HEALTH WITH ECONOMY MEATS, I should appreciate your opinion of it and its place in your daily teaching."

Marie Gifford

Director, Food Economics Department
Armour and Company


Some Tips on Saving the Meat Dollar
SUGGESTED WEEKLY MEAT ORDERS FOR FAMILY OF 4
LIBERAL MEAT BUDGET—$4.00 to $4.85 per week—Meat Allowance 12-13 lbs.

ARMOUR'S 75th ANNIVERSARY

ARMOUR AND COMPANY

MARIE GIFFORD AD-1-42
Armour and Company, Union Stock Yards
Chicago, Illinois

Please send me my free copy of your 6" x 8½" illustrated booklet, DEFENSE OF HEALTH WITH ECONOMY MEATS.

NAME..... ADDRESS.....

CITY..... STATE.....

Soup Garnishes. This outline of garnishes suggests new uses for everyday food products: cucumber balls, sliced onions or marrow to be served in clear soups; the shredded leaves of spinach or tapioca in creamed soups; and Irish potatoes, diced, pearled, or cut into various fancy shapes, in pepper pot.

Profits. Scoops are essential to standards, for spoonfuls vary markedly. Sugar cubes wrapped individually have reduced per capita consumption in restaurants. Baked potatoes are expensive on table d'hote meals because of the butter used with them.

HOTEL MONTHLY

Vol. 49, September 1941

*Decorating for profits. P. Dorris.—p. 4.
*Sweet cider for the masses.—p. 18.
*What apples are best for pie? W. A. Maclinn.—p. 48.

Vol. 49, October 1941

*The Park Hotel, Richland Center.—p. 26.
*The coffee shop.—p. 40.
*Apple dumplings.—p. 51.

Wall Paints. Type of paint, condition of walls, and suitable methods of application must be carefully considered before painting. Recommends purchasing paints from old-line companies. In choosing a color scheme there are six different types of harmony to consider: color monotone, analogous, complementary, split-complementary, blood-relation, and neutralizing. There should always be a dominant color in every room, carried out by the draperies, rugs and furnishings. Interesting deep colors are available which may be mixed with white to get the desired tint.

Frozen Cider. Apple cider, blended from Baldwins, Grimes, and Jonathans, and held at 0° becomes mellow and keeps as fresh as when made.

Apple Varieties. Cortland, Delicious, McIntosh, Golden Delicious, Gravenstein, Northern Spy, Red Gravenstein, Red Spy, Starking, Spy, and Stayman were found best for eating; Cortland, Gallia Beauty, Gravenstein, Northern Spy, Red Gravenstein, Red Spy, Rome Beauty, Spy, and Stayman for baking; Gravenstein, Jonathan, Northern Spy, Red Gravenstein, Red Spy, R. I. Greening, Spy, and Stayman for pie; Cortland and Golden Delicious for salad; and Duchess, Gravenstein, Oldenburg, Red Gravenstein, and Stayman for sauce.

Park Hotel. This Wisconsin hotel has a unique poultry-freezing system. Poultry is purchased alive and the entire process takes place in the freezing room. The equipment cost about $2200 and the cost per pound to freeze and store is 1–1½¢. Meat can be kept frozen indefinitely, but none is held over a year. Methods of cutting for space economy and service convenience are given.

Coffee Shop. Recipes for pumpkin, squash, and sweet potatoes include pumpkin chiffon pie made with cornstarch, pumpkin fritters and chips, squash soup, squash biscuits and sweet potatoes with lobster coral.

Apple Dumplings. Recipes for baked, boiled, and steamed apple dumplings as well as short paste, puff pastes, pie paste and rolled dumpling pastes.

JOURNAL OF HOME ECONOMICS

Vol. 33, September 1941

*Professionally trained volunteers in community nutrition education. A. H. Smith.—p. 450.

Vol. 33, October 1941

*The national nutrition outlook. H. S. Mitchell.—p. 537.
Increased food production in the national defense program. R. Thompson.—p. 571.
*Newer trends of food service on a university campus. F. Pope.—p. 574.
Building recipes. B. E. Nettleton.—p. 574.
*The place of the business home economist in the shifting scene today. E. L. Batchelder.—p. 579.

Vol. 33, November 1941

*Preserving the best in family living. M. L. Wilson.—p. 631.
*Needed research in food and nutrition. J. Whitacre.—p. 648.
Nutrition program.—p. 654.
*Red Cross training courses.—p. 656.
All-out farm production.—p. 657.

Community Nutrition Education. Homemakers of the Cleveland home economics association took a refresher course and at the request of representative Cleveland mothers, organized classes to be attended by very needy families for the purpose of learning the components of an adequate daily dietary and how to obtain them on a very limited budget. Demonstration lectures were given. Teachers were carefully picked for their presentation and knowledge of subject matter.

Nutrition Outlook. The number of men rejected for physical reasons by the selective service illustrates the importance of nutrition in defense. Because nutrition must be translated into terms of food, the responsibility of teaching practical nutrition lies with home economists. Women must be taught to make food palatable and to conserve food value. Efforts must be made to broaden the field of nutrition knowledge. Nutrition must be popularized, perhaps dramatized, to gain the attention of the indifferent, but scientific integrity must not be lost. The interest and cooperation of doctors and dentists, food industries and the government will make it easier to guide nutrition interest into useful channels.

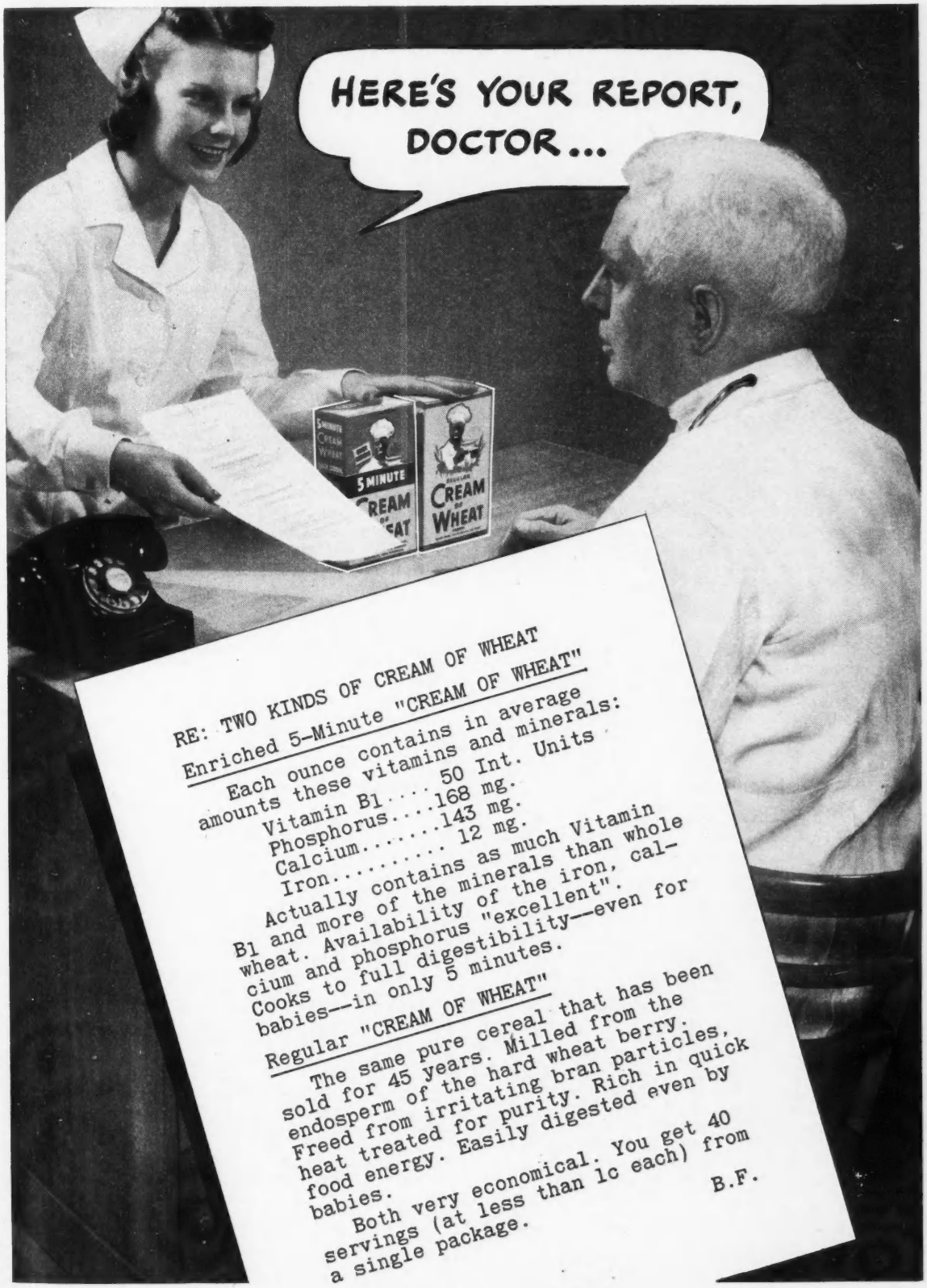
Campus Food Service Trends. The trend toward greater student satisfaction in food service at the University of Chicago is evidenced by the demand for better trained food service directors, by extension of serving periods in dormitories, by selective menus and greater variety, by student specials in cafeterias, by a sandwich bar and grilled steak unit, and by day and night service in the coffee shop. Cooperatives are also an influencing factor in food service.

The Business Home Economists. The home economics woman in business can aid defense by realizing the importance of honesty of representation of products or services and by furthering the welfare of the American home. Many can aid nutrition councils and civilian defense committees and initiate action when indicated.

Extension Teaching. The extension service, which reaches more than two-thirds of the farm families, encourages security with self-help projects and by stimulating home production, and improves family health by teaching nutritional requirements and pointing out the varieties of crops that can be grown at home to supply foods for good nutrition. Successes in these vital fields have laid ground work for plans for raising farm home living standards with rural electrification programs.

Food and Nutrition Research. In 1939–40 the research department of the American Home Economics Association compiled a list of home economics problems in which research was needed. Those suggested were classified according to subject matter and distributed as follows: food composition, 75; preparation, 136; preservation, 39; economics, 48; dietary habits and health, 106; nutritional status, 56; nutritive value, 87; nutritional requirement, 71. Food composition included assay methods and study of food components. Food preparation was divided into quality factors, grades of foods, techniques in relation to equipment, design of equipment, special cooking problems. Divisions of food preservation were bacteriological studies, types of storage, methods of canning. Relative cost of food, size of containers, buying habits, and time and motion studies are part of food economics studies. Dietary habits included allergy research and more information on adequacy of diets, and relation of diet to specific conditions.

Red Cross Training Courses. Two Red Cross foods courses, one for training nutrition aides and one for canteen-


HERE'S YOUR REPORT, DOCTOR...
5 MINUTE
CREAM OF WHEAT
RE: TWO KINDS OF CREAM OF WHEAT
Enriched 5-Minute "CREAM OF WHEAT"
Each ounce contains in average amounts these vitamins and minerals:
Vitamin B1....50 Int. Units
Phosphorus....168 mg.
Calcium.....143 mg.
Iron.....12 mg.
Actually contains as much Vitamin B1 and more of the minerals than whole wheat. Availability of the iron, calcium and phosphorus "excellent". Cooks to full digestibility—even for babies—in only 5 minutes.
Regular "CREAM OF WHEAT"
The same pure cereal that has been sold for 45 years. Milled from the endosperm of the hard wheat berry. Freed from irritating bran particles, heat treated for purity. Rich in quick food energy. Easily digested even by babies.
Both very economical. You get 40 servings (at less than 1c each) from a single package.
B.F.

"Cream of Wheat" Reg. U. S. Pat. Off.

group feeding, have been accepted by both the OCD and the Office of Defense Health and Welfare Services as giving adequate preparation for leadership in such projects. Only college-trained persons who have majored in foods and nutrition are accepted as teachers of the classes in nutrition and dietitians for the canteen-group feeding courses.

MODERN HOSPITAL

Vol. 57, July 1941

*Chefs and chief cooks. A. B. Mills.—p. 45.
*Glamourizing the soft diet. E. Crook.—p. 88.

Vol. 57, August 1941

Housekeeping and kitchen maids. A. B. Mills.—p. 55.
Trays dressed in color. D. DeHart.—p. 84.
Training dietary employees. M. Walker.—p. 86.

Vol. 57, September 1941

Those extra nourishments. D. DeHart.—p. 90.
Control of kitchen fires. L. F. Marr.—p. 94.

Vol. 57, October 1941

*Dietitians discuss re-organization of department, selective menus and cafeterias.—p. 80.
Teaching on the floors. D. DeHart.—p. 98.
Less waste in the cafeteria. M. Moos.—p. 99.

Vol. 57, November 1941

Making the most of "leftovers." M. Byrns.—p. 80.
*Food or cash for employees. A. C. Jensen.—p. 84.

Chefs and Chief Cooks. A national study of salaries. Notable correlation between salaries and size of hospital.

Soft Diet. Grant Hospital, Chicago, has successfully achieved a soft diet which looks like a square meal. Manual contains food lists worked out for this diet. Patients are given a selective menu.

Dietitians' Discussion. Reorganization is essential so that fewer people can assume the work of the dietary department. Diet kitchens may prove to be non-essential. The selective menu is not yet practical for the ward patient. The pay cafeteria has many advantages in large hospitals.

Food or Cash. The advantages of employees receiving cash in lieu of maintenance should be viewed in the light of the possible effect upon the nutrition of the employee.

NATION'S SCHOOLS

Vol. 28, October 1941

*All share in hot lunch. R. B. Hastings.—p. 66.

Vol. 28, November 1941

*Problems of the teacher-manager. R. A. Russel.—p. 64.

School Lunch. The hot lunch program in the public schools of Rushville, Missouri, has been developed through the cooperation of four agencies. The community club sponsors it, raised funds, and gathered equipment for the kitchen. The state Social Security Commission provides food from surplus commodities, the menus are worked out by a dietitian, the state WPA provides health-examined cooks and kitchen assistants, and the parents donate whatever they can in the way of food or money. Every child who desires lunch is served free regardless of the ability of his parents to contribute. Pupils are served at their desks by high school girls who volunteer for the jobs of waitress.

Teacher-Manager. Types of school cafeteria managers vary, but in most cases it is a teacher-manager who is in charge. Four school periods a day, two at the very minimum, should be allotted in order to carry out the many duties that go with her job. She must work with the school health service. She should try out new recipes in an effort to have an appealing counter. She is responsible for the welfare of the cafeteria employee as well as the child. She must write work schedules, handle money, know markets, and often be responsible for special parties. She must also promote the use of the cafeteria by suitable publicity.

RESTAURANT MANAGEMENT

Vol. 49, September 1941

*200 ways to control food costs.—p. 14.
*15 cream pie variations.—p. 28.
*15 custard pie variations.—p. 29.
*"They're in the army now!"—p. 33.
*What's new in Chicago.—p. 36.
*Good food hints. L. P. DeGouy.—p. 42.

Food Cost Control. A fan to circulate air in refrigerator boxes or other storage places will decrease evaporation and keep vegetables and fruits fresh longer. Sprouts, cabbage and lettuce can be freshened by removing the outer leaves and dipping the remainder in ice water; beets, by covering all but leaves with cold damp cloth; broccoli, by standing stems in ice water; carrots, by placing in ice water overnight; celery, by standing root end in ice water; stalk corn, by cutting off kernels and cooking; egg-plant, by removing dried part of end, punching small holes in end and placing in ice water overnight; rhubarb, by trimming quarter-inch off ends and standing stalks in a few inches of ice water overnight.

Cream Pie Variations. Cranberry, 1 No. 10-can cranberry sauce folded in last; frangipani, 2 lb. almond macaroon crumbs folded in last; malted milk, 1½ lb. malted milk powder, ½ lb. malt dissolved in milk; spiced, ¾ oz. mixed spices added last. Add any of these special ingredients to the following plain vanilla recipe: 1 lb. 10 oz. cornstarch, 2½ gal. milk, 4 doz. eggs; 5 lb. sugar, 1 T. salt, 2 lb. butter, and cut vanilla to ½ oz. Add flavoring and special ingredients to the basic recipe and cook 3 minutes. Top with meringue.

Custard Pie Variations. Almond, ½ oz. almond flavoring and 1 lb. chopped almonds folded in last; cream cheese, 2½ gal. cream cheese creamed in with all ingredients; eggnog, 1 oz. eggnog flavoring; grape juice, 1¼ gal. grape juice and 1¼ gal. water instead of milk; peppermint, 1 oz. peppermint flavoring. Add these special ingredients to the plain custard pie recipe: 5 lb. sugar, 5 doz. eggs, 1 T. salt, ½ lb. cornstarch, 2½ gal. milk, 1 lb. butter, 1 T. vanilla. Cream sugar, eggs, salt and cornstarch. Heat milk and butter to 200° F. Add to sugar and egg mixture and blend well. Add flavoring and special ingredients.

Army Food. Bamberger's Department Store, Newark, is publicizing at a profit the goodness of Army food. A daily menu in the restaurant exactly duplicates what the soldiers at Fort Dix are eating on the same day, and the foods are prepared according to Army recipes.

Department Store Restaurant. Steven's Department Store, Chicago, has designed a restaurant for the convenience of women shoppers. Tray service at specially designed single arm chairs, which include a tray support and purse rest, eliminates tables and makes for speedy service. Although there are only 100 seats in the restaurant, speedy service makes it possible to serve over 1000 people during the lunch period.

Food Hints. Boil spaghetti in chicken broth and serve it in a casserole with a little sausage or left-over meat balls, spread mixture of bread crumbs and cheese over the top and run under the broiler until the cheese mixture bubbles. Cooked rolled oats to which a quarter of a cup of bran has been added is popular for breakfast with brown sugar and cream.

Without sacrifice of a single property

Sunfilled **pure concentrated**

ORANGE and GRAPEFRUIT JUICES

meet an economic demand

In these widely endorsed products the flavor, bouquet, vitamin C content and other nutritive elements of the freshly squeezed juices are successfully retained. To convert into ready-to-serve form you simply add water. Year 'round uniformity, so important in dietetics, is assured through our unique methods of concentrating and blending.

No complaints from patients are likely if this year 'round, uniform product replaces the juice from underripe or overripe fruit such as is frequently found on the market.

Controlled blending is the crux of uniformity. Ripe fruit and low-sugar fruit are mixed at low temperatures under high vacuum to give a resulting juice constancy approximating 12 parts of natural fruit sugar to 1 part of natural fruit acid. This assures a delicious natural flavor and taste . . . throughout the twelve months of the year.

CHECK THESE SAVINGS . . .

- **Conserves the budget dollar**
- **Avoids time-consuming inspection, cutting and reaming of fruit**
- **Eliminates troublesome handling of bulky crates**
- **No spoilage, shrinkage and waste losses, or refuse problems to consider**
- **Infinitely less burden upon storage and refrigeration facilities**

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

Complimentary quantities to institutions on request

CITRUS CONCENTRATES, INC. · Dunedin, Florida

THE ***Jim Vaughan***

ELECTRIC MEAT, FISH AND BONE CUTTER

The "Jim Vaughan" is gaining popularity among leading dietitians. There are many reasons why this modern piece of equipment is rapidly taking its place in the hospital kitchen.

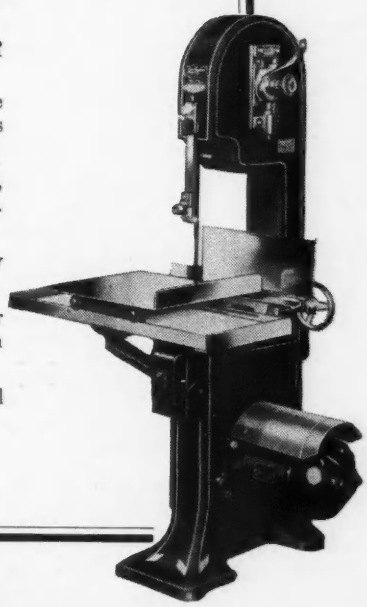
The Saving of Meats. The uniform and controlled cutting of meats, fish, and other meat products on "Jim Vaughan" result in equal and more portions. Users claim savings of 5 to 20% on their meat bills.

"Jim Vaughan" is Always Ready for work. It doesn't require highly skilled or experienced help. Portions are ready when wanted.

"Jim Vaughan" Cuts Many Foods, beef, veal, lamb, pork, fish, bones, or poultry. Besides such meats, "Jim Vaughan" also is extensively used on many other products to cut them into uniform portions.

The Saving of time. "Jim Vaughan" saves 50 to 80% of the time required for cutting. Such saving of time quickly pays for a "Jim Vaughan."

May we send you further information?



"Jim Vaughan" Company

732-738 N. Franklin Street, Chicago, Illinois

News Notes

Midyear Meeting, Executive Board, A.D.A. This meeting of the board will be held in Chicago February 13–14.

Women's Activities in Civilian Defense. A conference on this subject was held in Washington November 8 with Mrs. Eleanor Roosevelt presiding at a discussion of volunteer activities and Eloise Davison at that concerning organized groups and civilian defense. Following this meeting, Nelda Ross, president of the American Dietetic Association, dispatched a letter to state presidents of affiliated dietetic associations, stating that the importance of nutrition had been emphasized at this Washington conference and asking that each local group send in the names and addresses of suitable speakers who could interpret the Civilian Defense Program to the public and further the work. Miss Ross reports that returns have already been received in response to this request.

According to newspaper reports, Miss Davison, who is assistant director of OCD, was to fly to England late in December to study women's volunteer defense work there. It was said that thirteen other women were scheduled to make the trip.

War Department Announces Appointment of Mrs. Stone as Food Consultant. The Bureau of Public Relations, Press Branch, announced on December 2 the appointment of Mrs. Meryl P. Stone as a food consultant in the Subsistence Branch of the Quartermaster Corps. Mrs. Stone will be an associate of Mary I. Barber, food consultant to the Secretary of War and 1940–41 President of the American Dietetic Association. Mrs. Stone, who is an authority on large quantity recipes, will have special responsibilities in assisting with menus, conferring with food authorities, and explaining Army dietetics to various agencies throughout the nation. Her field trips will take her to Army camps over the country where she will observe the food being served the soldiers, study the menus and determine their caloric and other nutritional values. Mrs. Stone, a member of the American Dietetic Association, is a graduate of the University of Wisconsin and took her student dietetic internship at the University of Michigan Hospital, Ann Arbor, where later she was a member of the hospital staff. Subsequently at St. Mary's Hospital, Detroit, she had charge of the dietetic department and organized a student dietetic training course, which was officially approved by the American Dietetic Association. More recently she was on the staff of General Foods Corporation, New York, where she worked in close association with Bertha E. Nettleton, widely known authority on recipes for large institutions.

Seventh Annual Conference of Food Service Directors. An excellent feature of this conference at the Hotel Commodore, New York, November 7–9, was the report of conference studies presented by the following chairmen: "Decreasing Food Cost by Increasing Yield," Marjorie Trask, Swift & Company, Chicago; "Time Study on Preparation of Salads and Sandwiches," Jean Dunnigan, lunchroom manager, Detroit; "Procedure for Scoring Cakes," Bertha Nettleton, General Foods Corporation; "Serving Counter Specifications," Edna Gilbert, The Rayen School, Youngstown, Ohio; "Residence Hall Study," Quindara Oliver Dodge, Women's Educational and Industrial Union, Boston; "Lunchroom Nutrition Study," Helen Hobson, cafeteria manager, Cleveland. Other speakers and their subjects were as follows: "Adequate Nutrition for the School Lunch," Mabel R. Stimpson, associate nutritionist, Federal Security Agency; "Employee Morale in Food Serving Agencies," Dr. Ordway Tead, president, Board of Higher Education, New York; "Ways and Means of Developing Good Habits through the School Lunch," Margaret Batjer, Home Economics Project Section, Washington; "Supplementing Surplus Commodities to Provide Balanced Low-Cost Meals," George H. Chatfield, director, Bureau of Attendance, Board of Education, New York; and "Adapting Civilian Institution Equipment Needs to the Limitations Imposed by the Defense Program," Owen T. Webber, S. Blickman, Inc. Speakers at the "Town Meeting of Food Directors" were Dr. Mary de Garmo Bryan, Teachers College, Columbia University; Pauline Murrah, Department of Health, New York; Mrs. Dora Lewis, New York University; Dr. Worth McClure, Superintendent of Schools, Seattle; and Dr. Grace MacLeod, Teachers College, Columbia University.

Red Cross Canteen Classes. The New York *Herald Tribune* for November 30 announced that the American Red Cross had launched a campaign to train 500,000 "canteen aides" to handle group feeding in the event of disaster or wartime catastrophe and an additional 10,000 volunteers as nutrition aides to assist in the national nutrition program. The course will offer instruction in the fundamentals of food selection, preparation and service under emergency conditions. Exhibits, field trips, and food demonstrations will also form part of the course. The aim is to have nutrition instruction provided in each of the 3700 Red Cross chapters and a corps of canteen and nutrition aides in every community. Nutrition aides will wear the uniform issued by the Office of Civilian Defense and will be assigned to limited hours of volunteer duty with local nutrition projects. It is hoped that the lessons received will also help to improve the food habits of the communities.

Aids in the Program of Nutrition in National Defense. Number 8 in the series of Nutrition News Letters sent to all state nutrition committee members, calls attention to the five posters called "The Story of Mary J" which tell how community health services safeguard the nutrition of the preschool child. These posters are available free upon request from the Children's Bureau, U. S. Department of Labor. A list of helpful non-federal publications, posters,

Q. I find canned fruits very convenient, but are they as good for my family as the kind prepared at home?

A. Certainly. The principal dietary values of fruits are carbohydrates, vitamins, and minerals. The canning process does not affect the carbohydrates or mineral values of fruits. Also, canning has little or no effect on the vitamins in this type of food. Even vitamin C, the most easily destroyed of the vitamins, is well retained in canned fruits, because of the high degree of protection from oxygen during the canning process. (1)

American Can Company, 230 Park Avenue, New York, N. Y.

---

(1) 1932. J. Am. Med. Assoc. 98, 1429
1938. Nutrition Abstracts and Reviews 8, 281.
1938. J. Am. Med. Assoc. 110, 650.
1940. J. Am. Diet. Assoc. 16, 891.

The Seal of Acceptance denotes that the nutritional statements in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

etc., is suggested as follows: (1) "Food and the Family Income"—low-cost recipes prepared by the Nutrition Committee of the Health Service of the Federated Agencies of Montreal, distributed by the J. B. Lippincott Company, Philadelphia, at 25 cents for one copy or 20 cents each in lots of 100 or more; (2) "The Functions of Food in Nutrition"—large and small charts free upon application to the National Live Stock and Meat Board, 407 South Dearborn St., Chicago; (3) "Do Your Part to Save Food and Health"—large and small posters which are also available free of charge from General Electric Company, Bridgeport, Connecticut.

A Nutrition Institute, sponsored by the Philadelphia County Medical Society's Committee on Nutrition and Deficiency Diseases, the Philadelphia Dietetic Association and the Philadelphia Home Economics Association, among nine other organizations, was held at the Bellevue Stratford Hotel, Philadelphia, November 8. The formal program included the following: "What Every American Should Know About Nutrition," Dr. Lydia J. Roberts, University of Chicago; and "Americans Who Eat Away From Home," Dr. Mary de Garmo Bryan, Teachers College, Columbia University. Forum speakers included Grace Godfrey, dean of home economics, Drexel Institute of Technology, who presided at the discussion of "What Are the Ways and Means of Carrying Nutrition Education Into This Community?" with Dr. Laura W. Drummond, Pennsylvania State College, Lillian Hack, president, Philadelphia Dietetic Association, and Mrs. Caroline King, associate editor, *Country Gentleman*, among the participants. Exhibits were presented by the Canteen Service, American Red Cross, the federal and state governments, city organizations, Pennsylvania colleges, Nutrition Council, and Philadelphia Inter-State Dairy Council. Frances L. Hoag was chairman of the institute committee.

Nutrition Fellowships Announced. The Research Laboratories of Swift & Company, Chicago, have released an announcement by Charles H. Swift concerning the establishment of a series of fellowships intended to aid the federal government in its long-range national nutrition program. The fellowships provide for special research to be undertaken in laboratories of universities and medical schools with funds which the company has set aside as grants in aid. To be eligible for grants, projects should be aimed at one of the following objectives: the development of fundamental information on the nutritive properties of foods; or, the application of this fundamental information on the nutritive properties of foods to the improvement of the American diet and health. Swift & Company is naturally interested in nutrition research on meat and meat products, but grants will not be strictly limited to work in these fields. Any worthwhile study on the nutritive properties of foods or the improvement of diets will be eligible for a grant. Each fellowship will be operative for one year, unless renewed, and will be granted in an amount to be determined by the scope of the project. Placement of the Fellowships in Nutrition will be coordinated by Dr. R. C. Newton and his staff of the Research Laboratories of Swift & Company, Union Stock Yards, Chicago.

Training Manual for Restaurant Personnel. The November National Restaurant *Bulletin*, official publication of the National Restaurant Association, mentions their new training manual which has been sent to every member of that association. Among those who assisted in the development of the training manual are Grace Smith, past president of the association, and Nola Treat, both of whom are well known to members of the A.D.A. Other progressive developments in this association have been a management course held in Dayton, Ohio, covering the subjects of food cost control and accounting problems; buying and inventory control; maintenance and care of equipment; food merchandising and better selling methods; and personnel problems and employee training; and the course at Northwestern University directed by Alberta Macfarlane, educational director of the National Restaurant Association.

The Chicago Section, American Chemical Society, has announced that the 1942 National Chemical Exposition and the National Industrial Chemical Conference will be held November 17–22 at the Stevens Hotel, Chicago. Several scientific societies are planning to hold their conventions and meetings in Chicago during this same week to make use of the advantages the exposition offers in securing a larger attendance.

Nutrition Project for Camp Fire Girls. A defense project called, "Fortifying the Family," has been undertaken by the Camp Fire Girls as a part of their Home Craft interests. Every member will be earning Defense Honors by carrying on activities which vary from planning an "A to Z" dinner for four people at a cost of one dollar, to making posters and exhibits showing all the nutrition essentials. Local dietetic associations may wish to cooperate in this worthy movement. A folder giving details concerning this project is available upon application to Camp Fire Girls, 88 Lexington Avenue, New York.

What the Family Eats and What the Family Needs in a Week. This is the subject of an article in the December *Consumers' Guide*, which includes a chart to expedite the recording of a family's food and the determining of its nutritional adequacy. Copies of the *Consumers' Guide* may be obtained at five cents each upon application to the Superintendent of Documents, Washington.

The New Importance of Oleomargarine in the American Diet is the title of a folder prepared by the National Margarine Institute, Chicago. "Under the standard of identity for margarine adopted by the Federal Food and Drug Administration on September 6, 1941," the folder states, "margarine may be enriched with a minimum of 9000 U.S.P. units of vitamin A per pound. This standard also permits the addition of vitamin D." Hence this product can be included in a model diet in line with the dietary pattern recommended by the Committee on Food and Nutrition of the National Research Council. Detailed information concerning margarine is presented in the form of a question and answer column in which all the hows and whys relating to this product are included. The folder concludes with a page of attractive recipes for cakes, biscuits and southern fried chicken.

Studies on Wheat and Other Cereals. The Food Research Institute of Stanford University, California, in its list of Publications and Contributions 1921–41, covers practically the whole economic and nutritional story concerning wheat since the early 1920's up to the present day. The references suggested are of special interest not only to the wheat trade and flour millers but to students of nutrition and of world food problems.

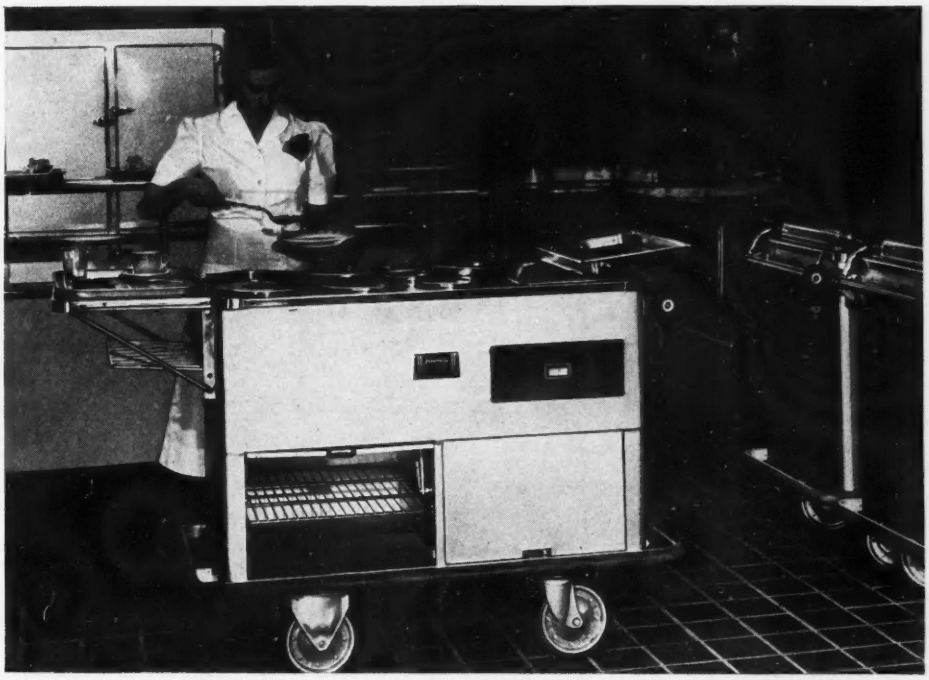
Public Hearing on Proposed Ice Cream Standards. The Federal Security Agency held a public hearing December 1 to receive evidence upon the basis of which regulations may be promulgated fixing and establishing definitions and standards of identity under the Federal Food, Drug, and Cosmetic Act for ice cream, frozen custard, sherbet, water ices and related foods.

IN THE NEW JEFFERSON HOSPITAL

BIRMINGHAM, ALABAMA

PROMETHEUS FOOD CONVEYORS

Exclusively!



Shown above, No. 1038, General Hospital Model. Serves 75 to 100 patients.

LIKE so many other leading hospitals, the fine modern new Jefferson Hospital will distribute its food exclusively on Prometheus conveyors. The Building Committee chose Prometheus food conveyors because of their sanitary construction, because of their gleaming, modern design, and because they deliver food "piping hot."

Investigate today the many features that are winning Prometheus food conveyors the preference of more and more superintendents and dietitians. Get the facts on its *operating economy,* and you're sure to agree "Prometheus is your best food conveyor buy."

Write today for complete literature, and the price story.

Tray Truck, No. 1023. Sturdily constructed, highly mobile. Individually heated shelves.

PROMETHEUS ELECTRIC CORP.

MANUFACTURERS OF QUALITY HOSPITAL EQUIPMENT SINCE 1901

401 WEST 13th STREET • NEW YORK, N. Y.

40 YEARS OF 1901 PROMETHEUS 1941 MANUFACTURING LEADERSHIP

Chicago Dietetic Association. The following appointments have been announced: Esther Bruce Stein, to Evanston Hospital; Marie Killinger, St. Luke's Hospital, to St. Joseph's Hospital.

Recent appointments to the dietary staff at Cook County Hospital include: Belle Hoffman, Helen Van Eerden and Jane Henkel, graduates of the training course of the hospital; Geraldine O'Farrell, Mercy Hospital training course; Doris Bruene, General Hospital, Cincinnati; Genevieve Schroer, University Hospitals, Iowa City; Ruth Baldwin, graduate of the training course, Vanderbilt University, Nashville; Georgia Bywaters, former student dietitian, Barnes Hospital, St. Louis; Bonita House, graduate, University Hospitals, Cleveland; and Frances Clark, Easton Hospital, Easton, Pennsylvania.

Mary Edna Golder, dietitian at St. Anne's Hospital for the last ten years, died on October 24, 1941.

Lucile Bates, who resigned her position at Cook County Hospital October 1, was married to Mr. A. Cobb on November 4 at Fayetteville, Arkansas. They will reside in Moline, Illinois.

Connecticut Dietetic Association held its annual meeting October 9 at which the following officers were elected: president, Alice Manek, Norwalk Hospital; president-elect, Helen Johnson, State Department of Health, Hartford; vice-president, Gertrude Dautrich, Bridgeport Hospital; secretary, Suzanne Carion, Veterans Home, Rocky Hill.

Dorothy Milavetz, Grace Hospital, New Haven, Helen J. Hubbell, Yale School of Nursing, and Elizabeth Jensen, Connecticut Dairy and Food Council, Hartford, will serve again on the committee for examination of dietitians conducted by the Connecticut State Personnel Department.

The following appointments have been announced: Janet Engebretsen, New Haven Hospital, to Johns Hopkins Hospital; Adelheid Zerell, Rockford City Hospital, Rockford, Illinois, to New Haven Hospital; Bertha J. Otis, Bulkley High School, Hartford, to American Friends Service Committee, North Carolina; Mrs. Carolyn Emmons Foerch, to New Britain General Hospital; Mrs. Mary Finch Niles, to Waterbury Hospital. Patricia Payzant has resigned her position at the New Britain General Hospital.

Leah Kane, New Britain General Hospital, has announced her marriage to Mr. William O'Neill.

Colorado Dietetic Association held its fall convention at Colorado State Hospital, Pueblo, November 1. The program, arranged by Mrs. Cora Kusner, head dietitian, included Doris Odle's report on the national convention, a discussion of the psychological aspects of personnel management by Dr. Scheulin, University of Colorado, a seminar on equipment, and a tour of the hospital kitchens. About thirty attended the convention.

Denver Dietetic Association officers are: president, Emma Hollett, Children's Hospital; secretary, Jane Taylor, Fitzsimmons Hospital; program chairman, Mabelle V. Williams, Colorado General Hospital; and social chairman, Aline Haakinson, St. Luke's Hospital.

Recent appointments include: Illadelle Holtslander, Pueblo State Hospital; Ruth Schmidt, St. Anthony's Hospital, Denver; and Marie Knickrehm, assistant dietitian, Denver General Hospital.

Serving on Colorado's nutrition defense board are the following dietitians: Mrs. Pauline Swanson, Colorado General Hospital; Doris Odle, Presbyterian Hospital; Fern Stone, Denver General Hospital; Louise Mohr, Fitzsimmons Army Hospital; Evelyn McNary, Colorado College; and Mrs. Cora Kusner, Colorado State Hospital.

October graduates of the Colorado General Cooperative Dietetic Training Course were as follows: Virginia Conners, North Dakota, now at St. Francis Hospital, Maryville, Missouri; Evelyn Larson, North Dakota, now at Denver General Hospital. Elizabeth Dickinson, Connecticut, was a November graduate. Students entering training in October include: Melba Bedford, University of Illinois; Audrey Beyer, Milwaukee-Downer College; Annie Sue Hester, Oklahoma A. & M. College; Charlotte McEwen, Oregon State College.

Maryland Dietetic Association. At the October meeting at Johns Hopkins Hospital, Mr. C. H. McFarland, executive director, Baltimore chapter, American National Red Cross, spoke on the work of this organization.

Alma Bering, chief dietitian, Sheppard and Enoch Pratt Hospital, and Engla J. Anderson and Helen McSweeney, Johns Hopkins Hospital, are teaching nutrition classes for the Red Cross.

Catherine M. Leamy, nutritionist with the state health department, has accepted a position as assistant to Melva Bakkie, nutrition consultant, American National Red Cross, Washington.

Alma Bering, E. M. Geraghty and Helen Schmidt attended the American Hospital Association convention in Atlantic City in September.

Massachusetts Dietetic Association. The following appointments have been announced: Ruth W. Spencer, Baker Memorial Hospital, to Yale University, New Haven; Beth Hayes, Charity Hospital, New Orleans, replaces Miss Spencer; Marjorie Healy, to Massachusetts General Hospital; Mrs. Olive Haege Barr, to McLean Hospital, Waverly, replacing Mrs. Mary Russell; Margaret Dunham, Indianapolis Medical Center, to Boston Lying-In Hospital.

Recent graduates have received the following appointments: From Massachusetts General Hospital, Barbara Jensen, to Sunny Acres Sanatorium, Cleveland; and Margaret C. Sawyer, to Maine Eye & Ear Infirmary, Portland. From Beth Israel Hospital, Shirley Levi, Dorothy H. Rubinoff and Harriett Kessel, to Boston City Hospital; Margaret Becker, to Sparrows Hospital, Lansing, Michigan; and Mary W. McCormick, to Deaconess Hospital, Detroit. From Peter Bent Brigham Hospital, Doris Allen, to St. Luke's Hospital, Cleveland; and Lois Bemis, to Morton Hospital, Taunton, Massachusetts.

Mr. and Mrs. Kinnealy (Eleanor Wedberg) Mr. and Mrs. Pearcy (Betty Woodwell), Mr. and Mrs. Kerry (Jane Clark) and Mr. and Mrs. Jacobs (Doris Levinson), announce the birth of sons.

Michigan Dietetic Association has elected the following officers for 1941–42: president, Jean Hawks Hewitson, Lansing; vice-president, Mildred Jones, Lansing; secretary, Mary Lou Seeley, Ann Arbor; treasurer, Elizabeth Brandt, Detroit.

Members of the Detroit Dietetic Association recently directed a course in nutrition attended by 500 women. Normal nutrition was emphasized throughout the course and applied during the practical period with 10 hours of experience in mass feeding.

New appointments include the following: Helen Ludwig, Ohio State University, to East Quadrangle, University of Michigan; Jeanne Perkins, Mosher Jordon Hospital, to Betsy Barbour Residence Hospital; Margaret Carpenter, St. Luke's Hospital, New York, and Anne Light, University of Indiana Hospitals, to University of Michigan; Jane Day, Memorial Hospital, Owosso, to the Private Pavilion, University Hospital.

New Jersey Dietetic Association held its ninth annual meeting at New Jersey College for Women, New Brunswick, November 27. The meeting began at 9.30 with coffee served by the administration seniors of the Home Economics De-

WHEN ADDING IRON TO THE DIET—

CHILDREN LOVE to get their iron in a delicious Brer Rabbit Molasses milk shake.

SPREAD ON BREAD, Brer Rabbit Molasses is a healthful substitute for mineral-deficient sweets.

EXTRA IRON for children in every piece of Brer Rabbit Molasses gingerbread.

Remember this appetizing help!

Brer Rabbit New Orleans Molasses is second only to beef liver as a food source of available iron.

But some foods having an abundance of iron contain comparatively little that can be assimilated by the body.

To provide accurate data on an excellent, inexpensive food source of iron, recent chemical and biological research[1] has been completed which conclusively establishes the dietary value of Brer Rabbit New Orleans Molasses. Its high iron availability (80% to 90%, depending upon the grade of the molasses) places it second only to beef liver as an iron-supplying food.

Three tablespoons of Green Label Brer Rabbit New Orleans Molasses daily provide more than 3 mg. of available iron. The amount may be increased by the physician depending on the age, condition and tolerance of the individual. Penick & Ford, Ltd., Inc., New Orleans, La.

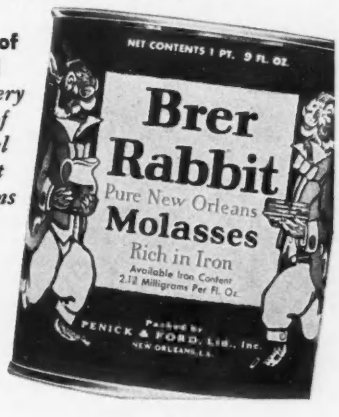
TABLE[1]

	Total iron mg/100 gm	Per cent availability	Available iron mg/100 gm
MOLASSES "A"*	3.2	97	3.1
MOLASSES "B"**	6.0	85	5.1
BEEF LIVER	8.2	70	5.7
OATMEAL	4.8	96	4.6
APRICOTS (*dry*)	4.1	98	4.0
EGGS	3.1	100	3.1
WHEAT	5.0	47	2.4
RAISINS (*Muscat*)	3.0	62	1.9
PARSLEY	3.2	50	1.6
BEEF MUSCLE	3.0	50	1.5
OYSTERS	5.8	22	1.3
CABBAGE	1.8	72	1.3
MUTTON	5.1	24	1.2
LETTUCE	1.5	63	0.9
SPINACH	2.6	20	0.5

*Brer Rabbit Molasses—Gold Label (light, mild flavored)
**Brer Rabbit Molasses—Green Label (dark, full flavored)
1. Am. J. Dig. Dis. Vol. VI No. 7 (Sept.) pp. 459-62, 1939.

A full mg. of AVAILABLE IRON *in every tablespoon of Green Label Brer Rabbit New Orleans Molasses*

ACCEPTED AMERICAN MEDICAL ASSN Council on Foods



partment. At the business meeting Sophia Morris, member of the House of Delegates, reported as delegate to the A.D.A. meeting. This was followed by a report on the convention by Winifred Cushing and round table discussions on education led by Veronica McGuire Molleck, on administration, by Sophia Morris, and dining room service, Winifred Cushing. Dorothy Becker, Beth Israel Hospital, Newark, was elected treasurer.

Speakers at the luncheon were: Margaret T. Corwin, dean; and Mrs. Helen W. Hazen, director, New Jersey College for Women; and Louise Stephenson, A.D.A. historian.

Dr. Franklin Tallman, clinical director, Rockland State Hospital, New York, spoke on "A Tempest in a Teapot," a discussion of emotions and how to control and understand them. Mr. Thomas R. Reid, vice-president, McCormick Sales Company, Baltimore, spoke on "Multiple Management."

A group of members and their friends met at the Patterson General Hospital to outline and discuss various topics to be used by speakers on nutrition. Because of the demand for individual talks to lay groups, the content, it was emphasized, should be as inclusive and well organized as possible.

Among those giving refresher and nutrition courses throughout the state are Alberta Dent, Harriet Stone, Annette Zelzer, and Asta Low Packard. Plans are also being made for the equipment of a mobile canteen to be used by the Somerset Hills Chapter of the Red Cross.

New York State Dietetic Association. Mrs. Winthrop Pennock, chairman of the New York State Defense Council, spoke on "The Part Nutrition Plays in Defense" at the September meeting of the Central New York Dietetic Association, Memorial Hospital, New York. Plans were made for gathering illustrative material to be used as aids in teaching nutrition. Evelyn Cox, University Hospital, Syracuse, was appointed chairman of a committee, and Marguerite Klobe, Buffalo General Hospital, head of the Buffalo committee which will cooperate in this state project.

Several members of the Central association have registered for a survey course in chemistry in relation to the vitamins, food storage and preservation, which will be offered at Syracuse University this winter. This is one of the special defense courses sponsored by the government.

At the October meeting of the Buffalo Dietetic Association, Lynne J. Sandborn spoke on "British Food Control."

The Buffalo and Erie County chapter of the National Nutrition Committee has requested a delegate from the Buffalo Dietetic Association.

New appointments include the following: Selina Parry, Utica State Hospital, to Pine Camp; Hilda Bailey, Marcy State Hospital, to Utica State Hospital; Leona Tiernan, Utica State Hospital, to King's County Hospital; Virginia Matthews, Rome City Hospital, to Brownsville, Pennsylvania; and Katherine Dixon, to Rome City Hospital.

Greater New York Dietetic Association met at Mt. Sinai Hospital, December 2. Dr. Herbert Pollack, physician-in-charge, Adult Metabolism, Mt. Sinai Hospital, discussed "The Evaluation of the Newer Concepts of Diet Therapy for Diabetes."

The New York *Times* for November 30 carried a news story concerning the active part the association will take in the defense program through providing speakers and teachers of nutrition courses.

To meet the problems peculiar to a large urban area, a special nutrition committee has been organized in Greater New York to cooperate with the New York State Nutrition Committee, the members of which are representatives from social, educational, and health agencies in the city. Dr. Grace MacLeod, Teachers College, Columbia University, is chairman; Lucy H. Gillett, Community Service Society, vice-chairman; and Carolyn Klutey, American Can Company, secretary and treasurer.

The association is cooperating in the city nutrition program sponsored by the New York City Departments of Health, Welfare, Education, Hospitals, and Markets. Voluntary speakers have been supplied for a variety of meetings, and lesson plans for a series of six demonstration classes on food selection and preparation have been completed. These lesson plans are available in mimeographed form to other interested groups. Committee members in charge of this activity are: Lillian Anderson, Community Service Society; Miss Klutey; Dr. Clara Taylor, Teachers College; Elizabeth Guilford, Metropolitan Life Insurance Company; Dorothy W. Kirk, *Woman's Home Companion;* Dorothy M. Stephens, Post-Graduate Hospital; Agnes Driscoll, Department of Homemaking Teachers, Board of Education; Dr. Norman Jolliffe, representing the New York Academy of Medicine; and Dr. H. Shirley Dwyer, representing the Dental and Oral Hygiene Society.

South Carolina Dietetic Association met jointly with the South Carolina Home Economics Association at the Wade Hampton Hotel, Columbia, November 14–15. The theme of the meeting, "Better Nutrition for Everyone in South Carolina," was carried out in the following program:

Work Accomplished and Planned in the Field of Nutrition for Defense: Ada M. Moser, home economist, South Carolina Agricultural Experiment Station, Winthrop College; Dr. Vera McNair, professor of nutrition, Winthrop College.

A Contribution of the Professionally Trained Person in the National Nutrition Program, Mabel Stimpson, associate nutritionist, Federal Security Agency.

Recent Developments in the Field of Nutrition, What of the Future. Dr. Roe E. Remington, food research laboratory, South Carolina Medical College, Charleston.

Feeding the Sick in the Army, Doris Fillingim, Station Hospital, Fort Jackson.

Nutrition in National Defense, Miss Stimpson.

The Whole World Eats, Dorothy E. Shank, Food Utilization Section, Bureau of Home Economics.

Recent Developments in Vitamin Research, Dr. Remington.

Texas Dietetic Association. A number of members were in attendance at an exhibit sponsored by the American Dietetic Association at the meeting of the American Dental Association, Houston, October 27–31.

Twenty-two dietitians from Texas attended the annual meeting of the American Dietetic Association at St. Louis.

The following appointments have been announced: Laverne Roach, to Federal Reserve Bank, Dallas, replacing Katherine Fry; Orvelle Rolleson, to Forrest High School; Lovilah Sheker, to Baylor Hospital; Edith Stolpe, to Parkland Hospital, replacing Ruth Cooper; Gladys Thompson, Parkland Hospital, to Station Hospital, Fort Sam Houston.

The marriage of Katherine Fry to Mr. Charles P. Cosgrove of the Army Air Corps has been announced.

Mr. and Mrs. Walter Donalson (Medie Kyle), and Mr. and Mrs. James M. New (Inez Crawford), have announced the birth of sons.

Utah Dietetic Association met at Latter-Day Saints Hospital, Salt Lake City, September 11. New officers are: president, Gail Huskinson Davis; president-elect, Margaret Doidge, Utah Valley Hospital, Provo; secretary and publicity chairman, Emma Chapman, U. S. Veterans Hospital, Salt Lake City; treasurer, Elaine Frogner Stewart, Latter-Day Saints Hospital.

New student dietitians at Latter-Day Saints Hospital include: Jean Barnes and Virginia Smith, University of Utah; Ruth Nichols, Iowa State College; Virginia Hagenson, Montana State University; and Mary Downs, Texas State College for Women.

Recent graduates of Latter-Day Saints Hospital have

The Problem

OF NUTRITION IN GERIATRICS

The declining physical activity of senescence has created in the minds of many aged persons the erroneous belief that dietary curtailment is desirable. Yet, modern authorities assert that nutritional requirements, with the exception of caloric fuel value, do not decrease, and their satisfaction is necessary if vigor, good health, and normal freedom from infectious disease is to be maintained.

The one-sided, usually inadequate diet of many aged persons can be readily balanced with New Improved Ovaltine. This delicious food drink provides nutrients likely to be lacking, and supplies them in easily assimilated form. Ovaltine puts little tax on the digestive apparatus; its pleasing palatable taste rarely loses its appeal.

Three daily servings (1½ oz.) of New Improved Ovaltine provide:

	Dry Ovaltine	Ovaltine with milk*
PROTEIN	6.00 Gm.	30.00 Gm.
CARBOHYDRATE	30.00 Gm.	66.00 Gm.
FAT	3.15 Gm.	31.95 Gm.
CALCIUM	0.25 Gm.	1.05 Gm.
PHOSPHORUS	0.25 Gm.	0.903 Gm.
IRON	10.5 mg.	11.9 mg.
COPPER	0.5 mg.	0.5 mg.
VITAMIN A	1500 U.S.P.U.	2953 U.S.P.U.
VITAMIN D	405 U.S.P.U.	432 U.S.P.U.
VITAMIN B_1	170 U.S.P.U.	302 U.S.P.U.
RIBOFLAVIN	0.25 mg.	1.28 mg.

*Each serving made with 8 oz. milk; based on average reported values for milk.

NEW IMPROVED

Ovaltine

2 KINDS—PLAIN AND CHOCOLATE FLAVORED

Ovaltine now comes in 2 forms—plain, and sweet chocolate flavored. Serving for serving, they are virtually identical in nutritional value.

• • •

Physicians are invited to send for a supply of individual servings of New Improved Ovaltine. The Wander Company, 360 North Michigan Avenue, Chicago, Illinois.

taken positions as follows: Merle Ballantyne, Corvallis Hospital, Corvallis, Oregon; Dorothy Mulcare, Hoff General Hospital, Santa Barbara, California; Hontas Quarles, Lutheran Hospital, LaCrosse, Wisconsin; and Sylvia Marsell, Price City Hospital, Price, Utah.

Marriage announcements include that of Gail Huskinson to Mr. Rowland M. Davis, and Elaine Frogner to Mr. H. M. Stewart.

News from our Advertisers and Exhibitors. Because of the shortage of labor, dietitians will be especially interested in the Reco Vegetable Peeler made by *Reynolds Electric Company*, Chicago. It is said that waste is reduced since skins are rubbed off in bran-like particles with only 10 per cent or less loss of weight of vegetables as against 25 per cent or more loss of weight by hand peeling. One bushel of potatoes or similar vegetables may be peeled in one minute using the larger machine.

American Dietetic Association members who signed up at the *Cream of Wheat Corporation* booth at the St. Louis meeting received a set of vitamin food charts which list the different sources of the several vitamins and other circulars descriptive of the well known Cream of Wheat products. Much has been said recently about enriched flour. "Enriched 5 Minute Cream of Wheat" may be called enriched farina since iron, calcium, phosphorus and vitamin B_1 have been added to meet the government standards for the enrichment of farina. The Cream of Wheat Corporation as a matter of fact was a pioneer in this development. This new "Enriched 5 Minute Cream of Wheat" not only equals government standards for such enrichment, but the requirement for vitamin B_1 is exceeded by 50 per cent while the standard for iron is many times that of the government requirement.

Among the generous contributions that have been made by our exhibitors and advertisers to the national nutrition program is that of the *American Can Company*. A booklet entitled, "Help Make America Strong", compiled by Isabel N. Young, director of the company's home economics department, presents detailed instructions written in simple terms for the use of people who want to know what to eat and why. These statements are based on figures released by government bureaus. In addition, Miss Young has included pertinent facts concerning the importance of careful cooking to nutrition. Tables showing the vitamin and mineral content of commercially canned foods as well as other food constituents and a collection of seasonal menus are also included. Miss Young has also prepared for distribution attractively illustrated booklets on the use of canned fish and other canned foods. For those who do not have it, we might add that the same firm has available for distribution a book entitled "Canned Food Reference Manual" which is of great assistance to all teaching and administrative dietitians.

A recent release of the *Wisconsin Alumni Research Foundation* is entitled "Milk as a Food Throughout Life." This book was written by Margaret House Irwin under the supervision of Drs. E. B. Hart, Harry Steenbock and C. A. Elvehjem. It tells the whole story of milk, from the cow through the distributor to the consumer. The booklet contains much information not usually found in nutrition textbooks; that is, concerning the mechanics of milk production and the testing of dairy products. An extensive list of references is appended. In addition, the Foundation has available a booklet on a "Dietary Survey of Dental Literature" which will bring the reader fairly up to date on the much disputed question of caries prevention. Another booklet concerns hemoglobin regeneration with iron and copper. A vitamin chart is also of interest, including as it does much data not found in the many other vitamin charts available.

A hot whole wheat cereal is a pleasing dish all year round and especially during the winter months. The dietitian's old friend, that popular breakfast food, "Ralston," is an excellent source of those vitamins and minerals likely to be deficient in the average diet. Full details concerning this time-tested product and that newer Ralston product, "Ry-krisp", are available upon application to the *Ralston Purina Company*, St. Louis. Leaflets on "Diet in Allergy" are also available.

One of the most helpful booklets for the administrative dietitian has been prepared by the *J. B. Ford Sales Co.*, makers of "Wyandotte" cleaners. This circla-bound booklet, entitled "Simplified Cleaning for Hospitals, Schools, Hotels, Restaurants, Clubs and Institutions", gives full details regarding the cleaning of all varieties of surfaces, such as marble, porcelain, enamel, furniture and even rubber sheets, also dishwashing, drain pipes and laboratory cleaning. Full details, too, are included concerning laundry operations. The instructions are simple and should be readily understandable to all types of workers. The company's house organ for October contains an article by P. N. Burkard, of the technical service department, on the ten points in machine dishwashing in which he emphasizes the proper use of detergents, temperature control and preparation of dishes for washing.

Horlick's Malted Milk Corporation, one of the A.D.A.'s older exhibitors, has recently prepared a booklet describing the place of the Horlick products in nutrition. The practical value of such fortified foods in difficult feeding cases and illness is well known to dietitians. The many ways in which Horlick products can be used in liquid and soft diets are depicted in a circular which comes with the booklet.

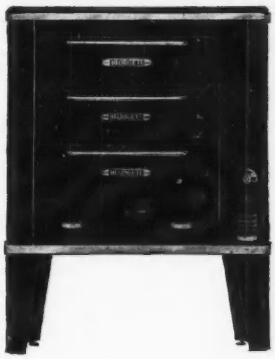
Beulah V. Gillaspie, director of the *Sealtest Laboratory Kitchen*, has prepared a variety of information concerning the economics of milk production as well as many practical ways of including milk in its different forms in the diet. One interesting feature of Miss Gillaspie's department is the miniature magazine entitled, "The Sealtest Food Adviser", published bimonthly and indexed yearly. Even though the recipes are in family portions, the ideas therein will be helpful to directors of large group services as well.

Standard Brands, Inc., presents an especially useful booklet entitled, "The Bread Basket", the recipes of which have been tested and approved by Fleischmann's Home Economics Department. Full directions for a great variety of breads and rolls, coffee cakes and griddle cakes are included, as well as refreshing drinks made with Fleischmann's yeast. Also available are the "Royal Cook Book" and "A Guide to Royal Success in Baking". Another folder gives directions for making good coffee and recipes made with coffee.

General Foods Corporation has just issued "New Desserts", a handsome 48-page book, containing around 130 exceedingly practical dessert recipes, arranged for quantity service. It is one of the most attractive printed pieces we have ever seen, with a beautiful cover illustrating in full color many of the entrancing, yet low-cost, dishes described. There is a thorough discussion of dessert ideas suitable for different types of service, and a particularly helpful index for ease in menu planning. Clearly printed on good paper, it presents in a useful and easy-to-handle manner some of the extremely practical recipes developed by Bertha E. Nettleton of the Corporation's Consumer Service Department.

The *National Canners Association*, through its Home Economics Division, offers a number of consumer and commodity leaflets, family and quantity-sized recipe books and miscellaneous information on canned foods. One folder gives recipes suitable for the school lunch using canned foods; another, entitled "Manual for the Teaching of Canned Foods", includes an outline of the subject, list of

SIMPLIFY YOUR BAKING & ROASTING OPERATION WITH THE NEW BLODGETT OVEN



- Single accurate control per section, assuring regularity of economical operation.
- Balanced springless door, opening flush with deck. Pans can be moved without tilting or bumping.
- Steam jet for bread and hard roll baking. Ready for steam connection.
- Clean, corrosion-resistant interior finish.
- Thicker blanket of Fiberglas insulation.

Write today for complete descriptive literature

THE G. S. BLODGETT CO., INC.
53 MAPLE STREET, BURLINGTON, VERMONT

For Multiple B-Vitamin Deficiencies *Embo*

a reliable *natural* source of Vitamin B Complex Factors

Patients suffering from complex B-vitamin deficiency show a gratifying response to treatment with Embo. Physicians find Embo equally effective as a dietary supplement during pregnancy and lactation, in post-operative cases, and for general Vitamin B Complex therapy.

Embo is high-quality wheat germ, mildly toasted, vacuum-packed for your protection. As such, it is valued for its incorporation of other protective nutrients with the Vitamin B Complex factors native to wheat germ. It is rich in natural thiamine (Vitamine B_1 — 280 Int. Units per oz.), a good source of riboflavin. Embo is also relatively rich in phosphorus; contains nearly as much iron per oz. as beef liver; approximately 30% protein; and the oil natural to wheat germ (11.5%).

A further advantage: patients find Embo's pleasing "toasted" flavor "easy to take"; cooperate willingly in treatment. For proof of this, just send the coupon for a sample.

GENERAL MILLS, INC.
MINNEAPOLIS, MINNESOTA

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

Embo is not advertised to the laity

"EMBO" is a registered trade mark of General Mills, Inc.

SEND FOR *FREE* PROFESSIONAL SAMPLE

GENERAL MILLS, INC., Minneapolis, Minnesota ADA 1-42
Please send free Professional Sample of Embo.

Name.....

Address.....

City..... State.....

Please indicate your registration No. .....

references, plans for student projects, sample questions and a complete list of canned foods now available.

"The 'Junket' Folks", Little Falls, New York, makers of the famous "Junket" Rennet Tablets and Powder and the more recent "Junket" product, "Danish Dessert", offers diet lists, helpful details on the feeding of children from infancy on, and something which will appeal to children, "The 'Junket' Folks Book of Fun".

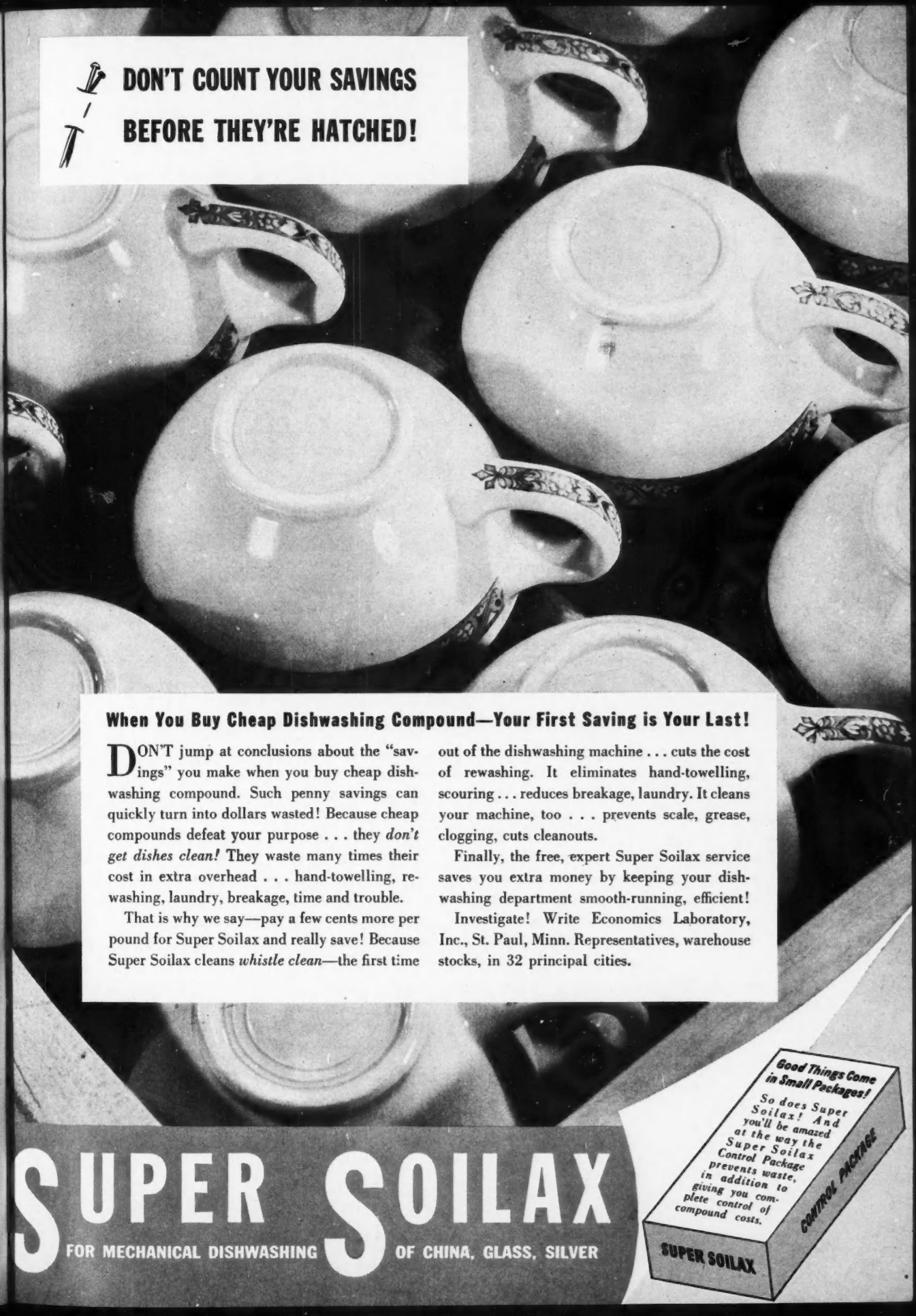
Irradiated Evaporated Milk Institute of Chicago has just released the booklet "Infant Feeding with Irradiated Evaporated Milk" which presents in concise form the facts behind the use of Irradiated Evaporated Milk for the improved nutrition of infants and children. The booklet includes, among other excellent chapters, general rules for the construction of infant feeding formulas, data on vitamin supplements, solid foods in the infant's diet, and so on. A folder is available which lists further educational material available from the Institute on request.

All dietitians know that cheese in its many forms adds zest and nutritional value to the menu. Those who are not already familiar with the Kraft Cuisine Service, directed by Mary Dahnke, will be pleased to know that a complete set of these recipes will be sent on application and those interested may have their names put on the regular mailing list to receive tested quantity or family sized recipes. Dietitians will look with favor on the highly ethical type of informative advertising presented by *Kraft Cheese Company*. In line with certain other food concerns this company is presenting educational information which is of real assistance in the national nutrition program. For those who do not happen to have seen an earlier release from this company, the booklet entitled "The Romance of Cheese" will be found of reading interest and assistance in teaching. The content covers the historical background of cheese and modern methods of making the many delicious varieties of Kraft Cheese products. Food service dietitians will be delighted with the collection of sandwich recipes printed on cards suitable for filing and the collection of other recipes for salad dressing, hot cheese dishes, salads, etc. all of which will be a valuable addition to one's collection of favorite recipes.

Diet Therapy in Ancient China

In one direction Chinese medical practice was extremely advanced: that of nutrition. Knowledge of dietary treatment of various diseases in China can be traced back as early as twelve centuries B. C. The "Record of Rites of the Chou dynasty" (about 1100 B. C.) lists not only the Imperial Physician, the Imperial Surgeon and the Regius Professor of Medicine, but also an Imperial Dietitian. The Ching Kuei Yao Lueh of Chang Chi contains vivid accounts of deficiency diseases in their various stages and describes numerous diets. This knowledge was summarized in the fourteenth century A. D. by Hu Se-Hui, who occupied the post of Imperial Dietitian from 1314 to 1330 A. D. and wrote a book called "The Principles of Correct Diet."

Hu Se-Hui even distinguished between the two forms of beriberi, known today as the wet and the dry. He gave sixty-two different diets which would supply, as we know today, the missing vitamins of the B group. The motto of his book was "Food alone cures many diseases." In face of these facts, it is somewhat piquant that recognition of beriberi as of dietary origin is usually ascribed to Takaki in 1880 A. D., an admiral of the Japanese navy. Ancient dietetic knowledge is so deeply embedded in the people in China that no distinction is made between grocers' and apothecaries' shops. Beriberi was not common in China till modern times. Anciently rice was ground in every family on the day it was used; this preserved a thin fatty layer on the grain and a large portion of the embryo which contained sufficient B_1. More study should be devoted to the contributions which Chinese civilization has made to human knowledge. These have been overlooked, partly because hidden behind a language the difficulty of which is often overestimated and partly because Chinese science was never spectacular. But in the story of the development of world culture they must be raised to their rightful position of honor.—*Needham, J., and Lu, G., Chinese contributions to medical science, J.A.M.A., 117: 1481, 1941.*



DON'T COUNT YOUR SAVINGS BEFORE THEY'RE HATCHED!

When You Buy Cheap Dishwashing Compound—Your First Saving is Your Last!

DON'T jump at conclusions about the "savings" you make when you buy cheap dishwashing compound. Such penny savings can quickly turn into dollars wasted! Because cheap compounds defeat your purpose . . . they *don't get dishes clean!* They waste many times their cost in extra overhead . . . hand-towelling, rewashing, laundry, breakage, time and trouble.

That is why we say—pay a few cents more per pound for Super Soilax and really save! Because Super Soilax cleans *whistle clean*—the first time out of the dishwashing machine . . . cuts the cost of rewashing. It eliminates hand-towelling, scouring . . . reduces breakage, laundry. It cleans your machine, too . . . prevents scale, grease, clogging, cuts cleanouts.

Finally, the free, expert Super Soilax service saves you extra money by keeping your dishwashing department smooth-running, efficient!

Investigate! Write Economics Laboratory, Inc., St. Paul, Minn. Representatives, warehouse stocks, in 32 principal cities.

Good Things Come in Small Packages!
So does Super Soilax! And you'll be amazed at the way the Super Soilax Control Package prevents waste, in addition to giving you complete control of compound costs.
CONTROL PACKAGE
SUPER SOILAX

SUPER SOILAX

FOR MECHANICAL DISHWASHING OF CHINA, GLASS, SILVER

Indian Diets

India is for practical purposes a self-contained country as regards her food supply. Both food imports and exports are small in relation to the total indigenous food production. Any improvement in the national diet is thus essentially dependent on the improvement of agriculture, animal husbandry and fisheries within the country.

At present the majority of the population of India is still occupied in raising food for its own use. Food grains for human consumption form approximately 80 per cent of the total crops, of which some 77 per cent are cereals, with rice leading in extent of cultivation. The cultivation of most varieties of rice demands an abundant water supply; hence rice is grown in areas with a high rainfall or on well-irrigated land. Generally speaking, except in the wheat-eating provinces, rice is preferred to other cereals as a crop and is grown wherever it can be produced.

Wheat comes next in order of importance, the annual yield being from 8 to 9 million tons. The millets, which grow on drier and poorer soil than either rice or wheat, are cultivated in most provinces and are essentially a poor man's food. Barley and maize are grown in certain areas, and tapioca is eaten as a staple food in one part of India. Pulses are grown throughout the country and form part of all Indian diets.

Except in certain parts of Northern India, where milk fat (ghee) is reasonably abundant and cheap, vegetable oils are the main source of fat in the diet of the majority of the population. These include sesamum, arachis, cocoanut, mustard and linseed, all of which are devoid of vitamin A. The results of diet surveys and general observation both indicate that milk and milk products are consumed by the poorer classes in very small amounts or not at all.

In spite of the very large livestock population, meat forms a small part of the total food supply. Sheep and goats are the principal sources. Marine fish is caught in quantities sufficient to make it abundant and cheap in coastal areas, and a good deal of dried and salted fish is prepared by primitive methods and distributed fairly widely and consumed by the poorer classes. Indian coastal waters are teeming with fish and there is an abundance of fresh water fish in Bengal but this large potential source of food remains practically untapped because the fishing industry is undeveloped. Poultry farming is also limited so that the consumption of eggs and poultry is negligible.

Of the total area under cultivation for fruits, about 60 per cent is devoted to mangoes, 21 per cent to bananas and 4.2 per cent to oranges. Other fruits of some importance are guavas and pineapples. The most commonly consumed vegetables are the *brinjal* or egg plant and the various gourds. Indigenous leafy vegetables, of which there are many varieties, are grown throughout the country. In general, however, the supply of all kinds of vegetables and fruits falls far short of the country's requirements. This is sometimes due to difficulties of water supply, but the chief reason is ignorance and apathy. Within recent years the production of sugar in India has risen rapidly, but the annual consumption of refined and unrefined sugar remains low.—*From an article by W. H. Aykroyd, Director, Nutrition Research Fund Association, Coonoor, S. India, Nutrition Abstracts and Reviews, October, 1941.*